Graduation Exercises
1962

Massachusetts Institute of Technology

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Massachusetts Institute of Technology

Rockwell Athletic Cage
Cambridge, Massachusetts
10:30 a.m. to 1 p.m.
Friday, June 8, 1962

Ceremonial Personnel

Chairman of the Corporation

JAMES RHYNE KILLIAN, JR.

President

JULIUS ADAMS STRATTON

Chief Marshal

DANIEL REID WEEDON, JR., President of the Alumni Association

Marshal of the Corporation

JOHN JOSEPH WILSON, Secretary of the Corporation

Marshals of the Recipients of the Degrees

PIETRO BELLUSCHI, Dean of the School of Architecture and Planning
GORDON STANLEY BROWN, Dean of the School of Engineering
HOWARD WESLEY JOHNSON, Acting for the Dean of the School of Humanities and Social Science
HOWARD WESLEY JOHNSON, Dean of the School of Industrial Management
GEORGE RUSSELL HARRISON, Dean of the School of Science

Investors of the Hood

HAROLD LOCKE HAZEN, Dean of the Graduate School
JOHN TORREY NORTON

Marshal of the Class of 1912

FREDERICK JOHNSON SHEPARD, JR.

Marshal of the Faculty

KENNETH ROBERT WADLEIGH

Faculty Marshal of the Graduates

CAMPBELL LEACH SEARLE

Marshal of the Audience

WILLIAM HAMILTON CARLISLE, JR.

Officers of the Class of 1962

BARDWELL CHENERY SALMON, President
FRANCIS JOSEPH BERLANDI, Vice President
GERALD LEONARD KATELL, Secretary
WILLIAM McCAA TAYLOR, Treasurer

The Order of Exercises

Prelude	ANDREW FENTON KAZDIN, *Director of the M.I.T. Brass Choir*
Academic Procession	THE GRADUATES, THE FACULTY, THE CLASS OF 1912, THE CORPORATION, AND THE GUESTS OF HONOR
The National Anthem	
Presiding	JAMES RHYNE KILLIAN, JR.
Invocation	THE REVEREND MYRON BARNETT BLOY, JR.
Introduction of the Guest Speaker	JAMES RHYNE KILLIAN, JR.
Address	Science and Technology in Modern Perspective, THE REVEREND THEODORE MARTIN HESBURGH, C.S.C., *President of the University of Notre Dame*
Interlude	
Award of the Goodwin Medal	HAROLD LOCKE HAZEN *to* NORTON LAMBERT STARR
Presentation of Degrees	JULIUS ADAMS STRATTON
Charge to the Graduates	JULIUS ADAMS STRATTON
Academic Recession of the Assembly	

"May Not This Prove A Memorable Day!"

A few notes about the Massachusetts Institute of Technology and its Graduation Exercises.

GOVERNOR JOHN A. ANDREW of the Commonwealth of Massachusetts signed an "Act to incorporate the Massachusetts Institute of Technology and to grant aid to said Institute and to the Boston Society of Natural History" on April 10, 1861. But plans for the new institution were laid aside during the Civil War, and not until February 20, 1865, could William Barton Rogers, M.I.T.'s founder, write in his diary, "Organized the school! Fifteen students entered! May not this prove a memorable day!"

President Rogers, who had come to Boston twelve years earlier to work for his vision of a school where young men could learn "exactly and thoroughly the fundamental principles of positive science, with their leading applications to the industrial arts," would hardly recognize the object of his toil today.

Since the first graduation in 1868, M.I.T. has awarded 51,179 degrees. A faculty of six in 1865 has grown to an academic staff of over 2,200 today. The first classes were held in rooms rented in the Mercantile Library on Summer Street in Boston, before completion of the Institute's own building on Boylston Street, on the site now occupied by the New England Mutual Life Insurance Company. M.I.T. moved to its present campus in Cambridge in 1916, following generous gifts by an anony-

mous benefactor first known only as "Mr. X," later identified as George Eastman. Growth since 1916 has brought the campus to more than 100 acres along the Charles River Basin, with buildings and equipment valued at nearly $50,000,000.

Today M.I.T. conducts teaching and research in all the principal fields of engineering and the physical sciences — in many of which, including chemical and sanitary engineering, aeronautics and astronautics, meteorology, food technology, and naval architecture — the Institute pioneered. There is also teaching and research in architecture and planning (the nation's first degrees in architecture were given here), biology, biophysics, biochemistry, industrial management, international relations, political science, economics, psychology, foreign languages and linguistics, and humanities. Dr. James R. Killian, Jr., Chairman of the M.I.T. Corporation, has called the Institute "a university with selected objectives, built around science and technology but embracing the arts, the social sciences, and the humanities as essential partners."

More than 6,000 students enroll at M.I.T. each year, from every state and over 70 foreign countries. About 150 are women, and 11 per cent are from foreign lands.

The Institute is privately supported. From a $32,500 budget in 1866-67, academic expenses have grown to over $29,000,000; tuition income covers less than one-half of this total.

M.I.T. enters its second century with a broad program for still greater strength in teaching and research, to make possible a great new forward step in the Institute's service to the nation and to the free world.

(*A Visitor's Guide to M.I.T. and other information about the Institute are available at the Information Office, off the main entrance foyer at 77 Massachusetts Avenue.*)

THE EXERCISES

The M.I.T. Graduation Exercises open with a simple academic procession which brings all principals in the Exercises to Rockwell Cage from the adjacent David Flett du Pont Athletic Center, where robing takes place.

Candidates for degrees march first in the procession, led by the officers of the Class of 1962, with bachelor's candidates preceding those for higher degrees. They take their places in reserved seats on the floor of the Cage. Next in the procession come members of the faculty, whose seats are reserved at the extreme left and right on the stage. Members of the Class of 1912, honored by the Institute on the fiftieth anniversary of their graduation, follow the faculty in the procession and take seats in the right

center section of the stage; they will remain in Cambridge for reunions over the week-end and join 1,200 other alumni at Alumni Day on Monday, June 11. Members of the Corporation, distinguished leaders in business, government, and education who form M.I.T.'s governing body, follow the fifty-year graduates to seats at the left center of the stage. The procession concludes with the guests of honor, followed by the Reverend Myron B. Bloy, Jr., and by the Chief Marshal, D. Reid Weedon, Jr., President of the M.I.T. Alumni Association. Mr. Weedon escorts the principals in the Exercises: the Reverend Theodore M. Hesburgh, C.S.C., with Dr. Vannevar Bush; and Dr. Julius A. Stratton with Dr. Killian.

Fulfilling his duties as principal officer of the ceremonies, the Chief Marshal carries an unusual mace, a symbol of the Institute's authority to conduct its business in the ceremonies at which it is present. This mace, 46 inches long, resulted from the silversmithing hobby of Leverett H. Cutten of Allentown, Pennsylvania, who graduated from M.I.T. in 1907. Elaborate symbolism on the mace suggests every professional field in which M.I.T. is active; there is space for engraving the names of all the presidents of the Institute; and surmounting the whole is a statue of a beaver, the engineer of the animal world, M.I.T.'s mascot.

MUSIC AT COMMENCEMENT

Music for the Graduation Exercises is provided by a group of professional musicians conducted by Andrew F. Kazdin, a graduate student in the M.I.T. School of Industrial Management who is Conductor of the M.I.T. Brass Choir.

Two of Mr. Kazdin's works are included in the music to be performed during the Exercises. The Processional opens with a fanfare, one of five composed by Mr. Kazdin in 1961 for the Institute's Centennial Convocation. *Intermezzo Giubiloso,* written by Mr. Kazdin especially for the 1962 Graduation Exercises, receives its first public performance today. The composer describes it as a festive piece designed to express the spirit of jubilation in the hearts of all who attend these ceremonies. Its main theme, conceived as a tribute to the Class of 1962, derives from the notes of the scale in the sequence 1-9-6-2.

Mr. Kazdin comes from Larchmont, New York; he entered M.I.T. with the Class of 1957 but transferred after two years to the New England Conservatory of Music, where he received the Bachelor of Music degree in 1959. He has written four works first performed by the M.I.T. Concert Band, of which he is Assistant Conductor—*Marche*

Baroque (1953), *Prelude and Happy Dance* (1955), the score for the M.I.T. film "The Social Beaver" (1956), and *Invention on Two American Folk Tunes* (1957). In 1959 the score for the film was made into a suite of the same name.

ACADEMIC COSTUMES

The academic costumes of participants in the M.I.T. Graduation Exercises are in accordance with a code adopted in 1895 by the Intercollegiate Bureau of Academic Costume. The gown for the bachelor's degree has pointed sleeves and is designed to be worn closed. The master's gown has pointed sleeves; the gown for the doctor's degree has bell-shaped sleeves; both may be worn either open or closed. The doctor's gown is faced and the sleeves are trimmed with velvet.

By its colors and their arrangement, the hood worn with the gown indicates the wearer's highest advanced degree, the field in which it was awarded, and the school from which it came. The lining of the hood carries the school's colors — cardinal red and silver gray in M.I.T.'s case. The velvet edging on the hood — wider for doctor's degrees than for master's degrees — signifies by its color the field in which the degree was designated: Master of Science and Doctor of Science hoods are trimmed in yellow; Master in Architecture in brown; Engineer in orange; and Doctor of Philosophy in blue.

While these traditions of academic costume are followed by most American universities, many foreign universities show great diversity, following traditions which extend back to the early days of the oldest institutions. In some cases the entire gown indicates by its color the school from which its wearer graduated. In other cases a distinctive cap is used. A few of these colorful academic costumes usually appear among the faculty at M.I.T. ceremonies.

The Chief Marshal wears a distinctive gown designed for and first worn at the Institute's Centennial Convocation in 1961. Drawing upon parliamentary robes of the Elizabethan era, it was designed by Mrs. Helen Bottomly of the M.I.T. Humanities Department.

THE SPEAKER

The Reverend Theodore Martin Hesburgh, C.S.C., has been President of the University of Notre Dame since 1952, and his administration has been one of the greatest periods of physical and academic growth in that University's history. A number of distinguished educators indeed have called the University's development under

his leadership the most remarkable at any American institution in recent years.

Prior to becoming Notre Dame's President, Father Hesburgh served for three years as Executive Vice President and for one year as head of the Theology Department of the University. He attended Notre Dame and the Gregorian University in Rome, and he holds a doctorate in sacred theology from the Catholic University of America.

Father Hesburgh combines his work at Notre Dame with an intensive career of public service. He is a member of the U.S. Commission on Civil Rights and the National Science Board and, by appointment of Popes Pius XII and John XXIII, permanent Vatican City representative to the International Atomic Energy Agency.

He is a director of the American Council on Education, the Institute of International Education, the Woodrow Wilson National Fellowship Corporation, the Nutrition Foundation, the Freedoms Foundation, and Educational Services Incorporated; a trustee of the Rockefeller Foundation and of the Carnegie Foundation for the Advancement of Teaching; and a member of the Special Studies Group of the Rockefeller Brothers Fund and of the advisory boards of the Institute of European Studies, the National Student Association, and the National Confederation of Catholic College Students.

Father Hesburgh has served on the Policy Advisory Board of the Argonne National Laboratory, is a director of the Midwest Universities Research Association, and in 1961 was President of the Association of American Colleges. An outspoken advocate and critic of higher education today, Father Hesburgh has written, "Too long, I think, we have in the social order put a premium on the virtues of patience and prudence. We have had the prudence, and the miserable of this world have had the patience. Why not strike a blow for two more appropriate virtues in our time: wisdom and courage? These are difficult to live with, but ultimately, if practiced, they vindicate the unique mission of the university."

Degrees Awarded

School of Architecture and Planning

BACHELOR IN ARCHITECTURE

Course IV-A. Architecture

ROBERT HENRY ARMSBY
Washington, D. C.

BERTRAND BENJAMIN BISHOP, JR.
Kingston, New York

GEORGE BUERMEYER
Ridgefield Park, New Jersey

SCOTT LEE DANIELSON
San Mateo, California

PEDRO ANTONIO DEL RÍO-ORTIZ
Rio Piedras, Puerto Rico

DENIS MAHONY JESSON
Vancouver, British Columbia

PETER WILLIAM MICHEL
Stamford, Connecticut

JOHN KENDALL MITCHELL
Winthrop

SIEW-WONG TSO
Kuala Lumpur, Malaya

ALEXEI VERGUN
Green Farms, Connecticut

GEORGE LEONARD WRIGHT, JR.
Boston

MASTER IN ARCHITECTURE

Course IV-A. Architecture

ROBERT YUAN CHUN HSIUNG, B.ARCH.
Boston

Study for the Core of Boston.

MASTER IN CITY PLANNING

Course IV-B. City Planning

EDWIN DREYFUS ABRAMS, A.B.
Cambridge
Relations Between the Trading Area Population of Different Types of Shopping Centers.

ROBERT BREUER, B.C.E.
Brooklyn, New York
Accessibility as a Determinate of Commercial Sales.

JULIA JEANNE BRODERICK, A.B. *Boston*
Planning Standards as Seen in the Adjudicative Process.

GEORGE NOEL KURILKO, B.S.
New York, New York
Visual Analysis and Design of City Lighting.

MICHAEL TRIVITT RYLAND, A.B.
Westport, Connecticut
Expressways and Urban Shorelines; Considerations for Their Visual Design.

ALAN DE COVERLY VEALE, B.A.SC.
Salmon Arm, British Columbia
Study of Goal Statements in Planning Reports.

JOHN EGGLESTON WOODWARD, JR., B.S.
East Orange, New Jersey
Land Assessment and Taxation as a Land Use Control.

DOCTOR OF PHILOSOPHY

BERNARD JOEL FRIEDEN *Cambridge*
Awarded the degrees of Bachelor of Arts, 1951, Cornell University, Master of Arts, 1953, Pennsylvania State University, and Master in City Planning, 1957, Massachusetts Institute of Technology. Thesis in the Department of City and Regional Planning: *Communities in Decline: The Use and Rebuilding of Old Neighborhoods.*

School of Engineering

BACHELOR OF SCIENCE

Course I. Civil Engineering

DIRK BERGHÄGER
Monte Estoril, Portugal

ISAAC FOINQUINOS
New York, New York

ALDEN TAYLOR FOSTER
Cambridge

RICHARD MERRILL GARBER
Scottsdale, Arizona

DALE GORDON GLADDING
Fontana, California

PETER PAUL GOLDSTERN
West Newton

RURIK BENDALY HALABY
Beirut, Lebanon

AIYUB ABBAS HOOSENALLY
Hong Kong

NATHAN ROGER HOPTON
New Haven, Connecticut

JAN THOMAS HYDE
Pittsburgh, Pennsylvania

STEPHEN BRUCE KAPELOW
Metairie, Louisiana

GERALD LEONARD KATELL
Wantagh, New York

JAMES WILLIAM KESLER
Exeter, New Hampshire

ADOLFO LAU-CHANG
Guatemala City, Guatemala

SAMUEL TAK YEE LEE
Hong Kong

EDWARD HUGH LINDE
Harrison, New York

MICHAEL FRANK PARLAMIS
Jamaica, New York
(See also S. B., Course XV.)

MARCUS HANNAN RAY, JR.
Chicago, Illinois

JAMES MICHAEL ROSS
Amarillo, Texas

EARL ROGERS RUITER
Grand Rapids, Michigan

BARDWELL CHENERY SALMON
Hingham

ALLEN HOWARD SAYE
Alhambra, California

HOOSHANG SAYF
Teheran, Iran

DAVID SCOTT STARE
Wellesley

CHARLES SVE
Pana, Illinois

IMAD TAHER
Beirut, Lebanon

JERRY ALBERT TLAPA
Chicago, Illinois

FIROUZ VAKIL
New York, New York

Course II. Mechanical Engineering

HENRY SWANSON AVERETTE
Southold, New York

WILLIAM BYRON BAILS, JR.
Los Altos, California

JAMES EDWARD BEETEM
South Daytona, Florida

ALFRED HAMMOND BELLOWS
Charlotte, North Carolina

ERICH KENNETH BENDER
Floral Park, New York

ROBERT THOMAS BRADY
Buffalo, New York

BRUCE GREGORY BROWN
Lemont, Illinois

GLENN ARTHUR BUCKLES
Albany, Georgia

JOHN ROSARIO BUTA
Salem, Ohio

VITO ALFRED CARAVITO
Orange, New Jersey

GEORGE RICHARD CASTLES
Stamford, Connecticut

RAMESH JAYANTILAL CHAUHAN
Bombay, India
(See also S.B., Course XV.)

KANG RYUL CHUN
Seoul, Korea

THEODORE CHARLES CONNORS, JR.
Passaic, New Jersey

RAYMOND GORDON COOK
McKeesport, Pennsylvania
(See also S.M., Course II.)

ALAN BRUCE COPELAND
Modesto, California

DAVID FRANK CORBIN
London, Ohio

ROBERT BRUCE CUTHBERTSON
Indianapolis, Indiana

DAVID STANLEY DWELLEY
Arlington

GIORGIO EMO CAPODILISTA
Rome, Italy

BIJAN FAZLOLLAHI
Teheran, Iran

HOWARD EISEN FINEMAN
Pikesville, Maryland

EUGENE FELIX FINKIN
New York, New York

WILLIAM CORTLANDT FRAZIER
Independence, Kansas

ALBERT FRANKLIN GLEIM
Shaker Heights, Ohio

SETH RICHARD GOLDSTEIN
New Rochelle, New York
(See also S.M., Course II.)

EMERSON BRYANT GRISWOLD
Janesville, Wisconsin

BEN BERNAM GUNTER, JR.
Durant, Oklahoma

WILTON EARL HALL, JR.
San Antonio, Texas

WILLIAM JAMES HASTINGS
La Grange Park, Illinois

JOHN CHARLES HEINE
Washington, D. C.

SHELDON JEROME HOFFMAN
Hartford, Connecticut

MATHEW HURWITZ
Brighton

RAYMOND BUCKWALTER LANDIS
St. Simons Island, Georgia

THOMAS ADOLPH LAYHER
Detroit, Michigan

KYUNG SUH LEE
Seoul, Korea

ROBERT ALLEN LYTLE, JR.
Clairton, Pennsylvania

WARREN HASTINGS McCANDLESS
Toledo, Ohio

JEROME EDWARD MANNING, JR.
Wayzata, Minnesota

JOHN PETER MORENSKI
Newark, New Jersey

PETER MPONTSIKARIS
Cambridge

PAUL MATTHEW MUNAFO
Quincy

CHARLES MELLING MYERS
Short Hills, New Jersey

THOMAS PETER NACINOVICH, JR.
Baltimore, Maryland

PETER CARL OMMUNDSON
Schenectady, New York

JOSEPH SHAILE PERKELL
Coral Gables, Florida

RICHARD MORTIMER PICKETT, JR.
Brighton

JOEL ROSS PITLOR
West Newton

JOHN THEODORE MARKWELL PRYKE
New York, New York

RICHARD ALLEN QUEENEY
Melrose

CHARLES RICHARD REIN
Gretna, Louisiana

JOHN GORDON RUPERT
White Bear Lake, Minnesota

ISAAC SHANFIELD
Montreal, Quebec

MICHAEL ROY TERRY
Mercer Island, Washington

MELVIN EUGENE WALKER
Holbrook

HAROLD MYRON WALLER
Detroit, Michigan

YIN WANG
Hong Kong

CLYDE FRANCIS WILSON, JR.
Saratoga, California

DAVID NEAL WORMLEY
Moline, Ilinois

GEORGE LOUIS ZIMMERMAN
Denver, Colorado

Course III. Metallurgy

HERBERT ELLSWORTH BATES
Cohasset

WILLIAM FREDERICK BREHM, JR.
Sayre, Pennsylvania

DAVID JONATHAN BROMER
Miami Beach, Florida

JEFFREY WILLIAM CARTER
Klamath Falls, Oregon

WILLIAM ANDREW EDMISTON
Evanston, Illinois

ALVIN HOWARD FEINGOLD
Brooklyn, New York

WILLIAM KARL GOETZ
Pittsburgh, Pennsylvania

GEORGE FRANCIS HURLEY
West Newton

VINCENT EDWARD LYSAGHT, JR.
New Rochelle, New York

JOHN CHARLES McCLOSKEY
West Newton

RUSSELL EDWARD MILLER
Dorchester

HAROLD BARRY SHUKOVSKY
Brighton

Course VI. Electrical Engineering

CLARON EDWARD ANDERSON
Barstow, California

GUILLERMO DEL CARMELO ANTONINI PACHECO
Caracas, Venezuela

JOHN FRANCIS BANZHAF, III
Bronx, New York

ROBERT RICHARD BARTSCH
Mason City, Iowa

ELLIOTT JOHN BAYLY
Duluth, Minnesota

RONALD MICHAEL BENREY
New York, New York

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Winthrop

KLAUS WERNER BIBER
Summit, New Jersey

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West Somerville

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Great Neck, New York

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Chicago, Illinois

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Romeo, Michigan

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Medford

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Barrington, Rhode Island

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Watertown

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New Prague, Minnesota

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Kingsport, Tennessee

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Bradford

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Cambridge

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Oakland, California

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Orlando, Florida

CARLTON BENJAMIN COMPTON
Decatur, Alabama

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Lynnfield

JOHN COBB CONGDON
Hingham

BRUCE LEROY CONROY
Martville, New York

RICHARD ARNOLD CROWELL
Endwell, New York

JOSEPH MICHAEL CROWLEY
Philadelphia, Pennsylvania

JOHN MATTHEW D'ALBORA
Titusville, Florida

JON ARCHEL DAVIS
Jacksonville, Florida

DONALD MEREDITH DIBLE
Chester, Pennsylvania

JOHN RANDOLPH BLAND DISBROW, JR.
Milwaukee, Wisconsin
(See also S.B., Course XV.)

DON DEE DIVINIA
Wichita, Kansas

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Clayton, Missouri

JAMES ROBERT DRESSLER
Chillicothe, Ohio

RICHARD ARTHUR DUCHAINE
Clifton, New Jersey

DEAN ERIC EASTMAN
Iron River, Michigan

RODNEY EDWARDS, JR.
Summit, New Jersey

JAMES RILEY ELLIS, JR.
Tulsa, Oklahoma

ROBERT ROGERS EVANS, II
Wayland

ROBERT SAMUEL FABRY
Paducah, Kentucky

ANDRIS FALTENS
Seattle, Washington

KEITH McDOWELL FERGUSON
Palo Alto, California

BARRY JAY FIDELMAN
Elmira, New York

ROBERT MANSFIELD FIORENZA
New York, New York

GORDON RANNEY GILBERT
Phoenix, Arizona

FREDERICK KEITH GLICK
Concord

MILES EDWARD GOFF
Lake City, Pennsylvania

JEREMY RUSSELL GOLDBERG
Washington, D. C.

THEODORE CARL GOLDSMITH
Chevy Chase, Maryland

LEONARD MARTIN GOODMAN
Roxbury

GERALD LANE GOTTLIEB
New York, New York

SHERWIN GREENBLATT
Chicago, Illinois

GEORGE MICHAEL HANEY
Arlington, Virginia

ALBIN ANDREW HASTBACKA
Gardner

HAROLD MARTIN HEGGESTAD
Lowry, Minnesota
(See also S.M., Course VI.)

RICHARD GARRETT HELMIG
Cleveland, Ohio

WILLIAM GEORGE HENRIKSON
Grand Rapids, Michigan

GEORGE WILLIAM HIPPISLEY, JR.
Auburn, New York

CURTIS STUART HOFFMAN
Aquierre, Puerto Rico

LAWRENCE ALBIN HOFFMAN
Silver Spring, Maryland

THOMAS OLOF HOLTEY
Rockford, Illinois

GEORGE ERNEST HOLZ
Little Ferry, New Jersey

LYLE OLIVER HOPPIE
Boise, Idaho

RICHARD LAWRENCE HORTTOR
Pampa, Texas

JOSHUA LADD HOWELL
Arlington, Virginia

HENRY RICHARD HOWLAND
Portsmouth, Ohio

TALBOT SHELTON HUFF, JR.
Austin, Texas

ERICH PETER IPPEN
Belmont

MICHAEL LLOYD JABLOW
New York, New York

WILLIAM HAROLD JACKSON, JR.
Raymondville, Texas

ELLWOOD DENNIS JOHNSON
Tampa, Florida

JOEL ALLEN KARP
Chelsea

JOSEPH WILLIAM KELLY, JR.
Windsor Locks, Connecticut

CHRISTIAN KEMPER
Rio de Janeiro, Brazil

JOHN ROBERT KINKEL
Dearbon, Michigan

MARTIN KLEIN
Mount Vernon, New York

KENNETH ALBERT KLIVINGTON
Boonton, New Jersey

HOMER LEE KNEARL
Stamford, Connecticut

GORDON RAYMOND KNIGHT
San Leandro, California

KENNETH CHARLES KOERBER
Cincinnati, Ohio

DAVID JOHN KORKOSZ
Chicopee

ALAN KOTOK
Vineland, New Jersey

MICHAEL STEPHEN KOTTLER
Cleveland Heights, Ohio

DAN KRAFT
Belo Horizonte, Brazil

HANS KRISTIAN KROG
Trondheim, Norway

ROBERT GEORGE KURKJIAN
Los Angeles, California

KENNETH DRAKE LABAUGH
Paterson, New Jersey

DAVID HENRY LaFORGE
Sudbury

JOHN DWIGHT LARSON, III
McMinnville, Oregon

MICHAEL EDWARD LEE
San Leandro, California

MICHAEL DAVID LEIS
Howard Beach, New York

WILLIAM SILVER LEVINE
Brooklyn, New York

LEONARD ROLAND LINDENMEYER
Baltimore, Maryland

DOUGLAS HENRY LOESCHER
Rochester, New York

JON CHRISTIAN LUKE
Minneapolis, Minnesota
(See also S.B., Course XVIII.)

JOHN FRANCIS McILVENNA, JR.
(January, 1962)
Lynn

THOMAS DANIEL MANTEI
Milwaukee, Wisconsin

STANLEY IRA MARCUS
Allentown, Pennsylvania

CHARLES ALFRED MARTIN
Emporia, Kansas

WINN FARRAR MARTIN
Clayton, Alabama

GEORGE JULIAN MEYERS, III
Wyomissing, Pennsylvania

WILLIAM MIHALTSE
Bayside, New York

RICHARD JAY MILLMAN
Chicago, Illinois

ROGER SHIH-YAH MO
Sao Paulo, Brazil

JAMES DONALD MOORE
Maryville, Tennessee

CHARLES HAROLD MOSER
Buffalo, New York

CHARLES WILLIAM NIESSEN
St. Paul, Minnesota

MARTIN MANUEL NOVACK
Queens Village, New York

JOHN EVERETT OHLSON
Seattle, Washington

PAUL MURRAY OLMSTEAD
Fair Lawn, New Jersey

RICHARD SENNOTT ORR
Bethel Park, Pennsylvania

GERALD LEWIS PARKER
Garden Grove, California

ERIK VIGGO PEDERSEN
Hampton Village,
New Brunswick

JAMES EMMERT PETERSON
Olivette, Missouri

MARTIN CARL POPPE, JR.
West Hempstead, New York

ROBERT WINSLOW PUFFER, III
Wellesley

JASPER JAMES RANDAZZO, JR.
Kansas City, Missouri

ALLEN KNUTE REAM
Hayward, California
(See also S.B., Course XV.)

MICHAEL HOWARD REID
Los Angeles, California

RICHARD ALAN REITMAN
Linden, New Jersey

RAYMOND EDWARD RINK
Shooks, Minnesota

JOHN AUGUST ROLLWAGEN
St. Paul, Minnesota

ROGER MAYES ROWE
Seattle, Washington

MURRAY B. SACHS
University City, Missouri

LAWRENCE SALBA
San Bernardino, California

ELLIOT ROBERT SCHILDKRAUT
Hewlett, New York

HERMAN MARTIN SCHNEIDER
Bernardsville, New Jersey

WILLIAM ROBERT SCHONBEIN
Seattle, Washington

PAUL ROBERT SCHROEDER
Cincinnati, Ohio

GABRIEL SEGAL
Tel Aviv, Israel

GIDEON SEVER
Rehovoth, Israel

DAVID SHERES
Tel Aviv, Israel

THEODORE JEROME SHESKIN
Teaneck, New Jersey

MORTON SHLENSKY
Chicago Heights, Illinois

DONALD LEIGH SMITH
Kansas City, Missouri

ALAN SANFORD SOCK
North Smithfield, Rhode Island

JEFFREY MARTIN SPEISER
New York, New York

JOHN OLIVER STANLEY
Maryville, Tennessee

DOUGLAS WASHBURN STEELE
Hatboro, Pennsylvania

LARRY LEE STINE
Asbury Park, New Jersey

NORMAN DALE STRAHM
Wichita, Kansas

THEODORE ROBERT STROLLO
Cheshire, Connecticut

JOHN HUBBARD TAYLOR
Schenectady, New York

PAUL VICTOR TEPLITZ
Pittsburgh, Pennsylvania

JAMES ELBERT THOMPSON
Cambridge

RONALD ROY TROUTMAN
Milton, Pennsylvania

B. T. TUCKER
Amarillo, Texas

BRIAN PARKER TUNSTALL
Tuscaloosa, Alabama

LAWRENCE DOUGLAS TURNER
Bronxville, New York

RICHARD JOSEPH UHLIK
Jamaica Plain

DAVID HERMAN RAPHAEL VILKOMERSON
Camden, New Jersey

JACK LYLE WALKER
Mattawan, Michigan

GILBERT ALAN WEINGARTEN
Hackensack, New Jersey

DAVID SHOU-YEH WONG
Hong Kong

ROBERT PANSING WONG
Richmond Hill, New York
(See also S.B., Course XV.)

HAROLD SEUNGSOO YANG
Honolulu, Hawaii

DONALD YANKOVICH
Wilkes-Barre, Pennsylvania

Course X. Chemical Engineering

SCOTT WILLIAM ALLISON
Syracuse, New York

JAMES STUART ANDERSON
Pine Beach, New Jersey

ROGER THEODORE BALL *(September, 1961)*
Silver Spring, Maryland

ROBERT RAYMOND BARTHELEMY
New Bedford

WILLIAM DOUGLAS BLOEBAUM, JR.
Redlands, California

JAMES GATEHOUSE BRANDELY
Richmond Hill, New York

PETER BROWN
East Orange, New Jersey

RONALD JAMES CAHILL
Lexington

EDWIN ARTHUR CARLSON
Springfield

GEOFFREY CHANG
Porto Alegre, Brazil

HERSCHEL CLOPPER
Peabody

DAVID CLARENCE CORSON
Roselle Park, New Jersey

JOHN LOUIS COSTELLO
Dorchester

PHILIP DAVID CUNNINGHAM
Medford

RICHARD STEVEN DALEAS
Elmhurst, New York

NEIL DOPPELT
Uniontown, Pennsylvania

RICARDO DUSSAN VILLAVECES
Bogota, Colombia

ROBERT EDWARD FIELDS
Kansas City, Missouri

THOMAS HENRY GAWRONSKI
Minneapolis, Minnesota

CHARLES CHRISTIAN GERHEIM, JR.
Canfield, Ohio

ROBERT LANDAU GOLDSMITH
Herrin, Illinois

JON MERRILL HEUSS
Chicago, Illinois

ROBERT ARTHUR JOHNSON
Sag Harbor, New York

DAVID HAMILTON KOCH
Wichita, Kansas

WILLIAM INGRAHAM KOCH
Wichita, Kansas

MICHAEL ALAN KORNITZKY
Milwaukee, Wisconsin

THOMAS JOSEPH LAGEMAN
Pittsburgh, Pennsylvania

ERNESTO JUAN MACAYA ORTIZ
San Jose, Costa Rica

ANTHONY CHARLES MACK
Brooklyn, New York

WILLIAM GEORGE MARGETTS
Gardner

JAMES DARRELL MILLER
Milwaukee, Wisconsin

JOHN ALFRED MOULSON
Pawtucket, Rhode Island

EDWARD MARTEL MYSKOWSKI
Stoneham

DAVID EARL NICKLES
Natick

JOSEPH FRANK OSHA
Boonville, Indiana

GEORGE CHRISTIAN PEDERSEN, JR.
Perrine, Florida

ROBERT LEO POWELL
North Syracuse, New York

BRUCE EDWARD PRIOR
Hazardville, Connecticut

KENNETH JOSEPH PULKONIK
Elizabeth, New Jersey

PHILIP SHELDON RABINOVITZ
Forest Hills, New York

ALAN KIM REYBURN
Tulsa, Oklahoma

STEPHEN CORRIDON ROOT
Winchester

MARTIN NATHAN ROSEN
Paterson, New Jersey

RICHARD VAN BERGAN ROSSMAN
Milton

PHILIP ANDREW RUZISKA
Union, New Jersey

FREDERICK WILLIAM SCHMIDT
Freeport, New York

EDWARD MYRON SCHNEIDER
Mount Vernon, New York

DAVID MICHEAL SCHROEDL
Marysville, Washington

HYUNKOOK SHIN
Seoul, Korea

XAVIER LEOPOLDO SIMON FENYVESY
Mexico D. F., Mexico

KARL JOSEF SLADEK, III
Austin, Texas

FRANK BARKER SPROW
St. Petersburg, Florida

JAMES STANLEY STEPHENS
Chattanooga, Tennessee

ROLAND CLIVE STOCKDALE
Prestbury, England

JAMES HERBERT TESTRAKE
Muscatine, Iowa

ROBERT LOUIS THOMAS
Knoxville, Tennessee

DAVID ANDERSON TURNER, IV
St. Joseph, Missouri

GEORGE MEAD WYMAN
Coffeyville, Kansas

Course X-B. Chemical Engineering Practice

CLARENCE WESLEY WOLF, JR.
Prairie Village, Kansas

Course XIII. Naval Architecture and Marine Engineering

JUDITH ANN BRAINARD
Clinton, Connecticut

JOHN WILLIAM DEVANNEY, III
Cincinnati, Ohio

Course XVI. Aeronautics and Astronautics

TOMMY JOE ALEXANDER
El Paso, Texas

MOHAMED TALAAT BADRAWI
Giza, Egypt

JOSEPH JOHN BAJONI
Medford

DOUGLAS LEE BARRITT
Wichita, Kansas

TERRY BRIAN BIEFELD
Bensenville, Illinois

CHARLES JUNIOR BRUGGEMANN
San Francisco, California

DONALD DOMENICO COLOSIMO
Royal Oak, Michigan

STEPHEN SINON DUNN
Old Lyme, Connecticut

EDWARD BARRY FEINBERG
Belmar, New Jersey

CHARLES WILLIAM GAMBLE
Littleton, Colorado

JOHN EDMUND GIBBONS, JR.
Hyde Park

HOWARD LLOYD GRAVES, JR.
Lock Haven, Pennsylvania

RICHARD McLEAN HACKER
Kettering, Ohio

STANLEY HARRISON
Belmont

PHILIP FRANK HUDOCK
Hazleton, Pennsylvania

BROR OLOF HULTGREN, III
Mohnton, Pennsylvania

DAVID CLIFFORD IVES
Binghamton, New York

DAVID ASHTON KLEINHEN
Pomona, California

JOHN ERWIN LaGRAFF
Schenectady, New York

MICHAEL PHELPS LAWTON
New Haven, Connecticut

JERRY LAMAR McAFEE
Kirkwood, New Jersey

DAVID RANDALL MAYHEW
Hartford, Vermont

THOMAS PETER NEAL
Watertown

RONALD PASQUALINI
Brooklyn, New York

DOUGLAS MERCER PELL
Cooperstown, New York

ROGER JOSEPH PHANEUF
Bristol, Connecticut

CHESTER HERBERT RILEY
Pepperell

ARTHUR JAY SAMBERG
Tenafly, New Jersey

PHILIP STEPHEN SCHMIDT
Houston, Texas

ELMER LEROY SMITHSON
Huntington Beach, California

WILLIAM McCAA TAYLOR
Middle Cove, Australia

TIMOTHY LEONARD VOGT
Chappell, Nebraska

WARREN CHARLES WETMORE
Hampton, Virginia

CHARLES LEWIS WHITMAN
Albany, Georgia

STEPHEN WOO
Boston

MASTER OF SCIENCE AND BACHELOR OF SCIENCE

Course II. Mechanical Engineering

YUKIKAZU IWASA *Kyoto, Japan*
(See also S.M., Course VI.)
Trapped Flux in Superconducting Cold Worked Single Crystals of Niobium.

HARVEY ALAN SINGER *Newton Centre*
Application of Superposition Theory to Heat Transfer in Entrance Region of Circular Tubes.

SANFORD GRANT WEINER
Detroit, Michigan
Engineering Parameters for Underwater Electrical Discharge.

Course VI-A. Cooperative Course in Electrical Engineering

Master of Science in Electrical Engineering unless otherwise indicated.
Bachelor of Science in Electrical Engineering

PHILIP BURSKY *Brooklyn, New York*
Comparison of Turing Machines Using Quadruples and Quintuples.

ARTHUR CHIH-MEI CHEN
Forest Hills, New York
Noise Measurement of a Traveling-Wave Maser.

ROBERT HENRY DAVIS
Frankford, Delaware
Feasibility Study of Hybrid Circuit Realizations.

ARTHUR DANIEL DELAGRANGE
Ripplemead, Virginia
Automatic Pulse Position Tracker.

DONALD NORMAN GRAHAM
Cleveland, Ohio
Two Dimensional Filtering to Reduce the Effect of Quantizing Noise in Television.

MARSHALL GREENSPAN
West Hartford, Connecticut
Graded-Junction Varactor Frequency Doubler.

CURTIS PAUL HARTWIG *Roxbury*
Field Patterns Around Small Bar Magnets.

PAUL WALTER JAMESON *(September, 1961)*
Cambridge
Thermal Noise in a Gyrotropic Plasma.

WILLIAM ANTHONY KLEINHANS
Rochester, New York
Design of Bond Pass Filters Having Flat Phase in the Pass Band.

WALTER FRANK KROLIKOWSKI
Manchester, New Hampshire
Helix Noise in Traveling-Wave Tubes.

WILLIAM BENJAMIN LENOIR
Miami, Florida
Thermoelectric, Constant-Temperature Oven.

HAROLD LEVY *(September, 1961)*
New York, New York
Computer Analysis of Handwriting Applied to Detection of Cancer.

MASAYUKI OMURA *San Martin, California*
Radiation Pattern of a Slot in a Ground Plane Covered by a Plasma Layer.

AARE ONTON *Boston*
Steady-State and Transient Behavior of Electroluminescence-Photoconductivity Latches.

CHARLES CLIFT PEREZ *Arlington*
Feedback System for a Stable Magnetic Suspension in Air.

HIN-CHIU POON *Hong Kong*
Admittance Measurement of Germanium Backward Diode.

JOHN EDMUND SAVAGE *Lynn*
Sequential Decoding for the Binary Erasure Channel.

PAUL MYRON THOMPSON
Grosse Pointe, Michigan
(S.M. without specification of course or school.)
Program for the Creation of Printed Circuit Land Patterns Using Heuristics.

Course XVI. Aeronautics and Astronautics

MERLIN DORFMAN *Newton Highlands*
Investigation of a Possible Mechanism for Lunar Landing.

BYRON HUGH WILLIS *Winslow, Arizona*
Effect of Parameter Variations upon Model Reference Adaptive Control System Performance.

MASTER OF SCIENCE

Course I. Civil Engineering

MARCELO DARWIN ARCOS EGRED
Quito, Ecuador
Graduate, Ecuadorian Naval Academy
(See also Nav. E., Course XIII-A.)
Investigation of the Optimum Design of Columns from the Weight-Strength Point of View.

ROGER EDWARD ANTHONY ARNDT, B.C.E. *Queens, New York*
Effect of Superposed Throughflows on Motion Induced by Enclosed Rotating Disks.

SAN HLA AUNG, B.SC. *Rangoon, Burma*
Analysis of an Exposition Coliseum.

ARNOLD WILLIAM BARNETT, B.C.E.
Brooklyn, New York
Characteristics of an Open-Tube Wave Attenuation System.

GUY MARCEL BEAUDOIN, DIPL.ING
Montreal, Quebec
Comparison of Methods of Analysis for Folded Plates Structures.

ROGER RECKLING BLUNT, B.S.
East Providence, Rhode Island
(See also S.M., Course XXII.)
Fast Neutron Attenuation Measurements. (With G. K. Withers, Jr.)

MIGUEL VICENTE BOCCO, B.S.
Caracas, Venezuela
Effect of Gradual Change of Depth on a Train of Surface Waves. (With J. L. M. Gagnon.)

JOHN PARKINSON CANNON, B.S.
Shelley, Idaho
Roof Beam and Column Systems for Farm Buildings.

ANTHONY CHARLES CENTORE, B.S.
Lexington
Economic Applications of High Strength Steels in Structural Engineering.

JACQUES FABIEN CHARTRAND, DIPL.ING
Terrebonne, Quebec
Behavior of Small-Scale Deep Beams of Reinforced Mortar under Static Loading. (With P. Thivierge.)

ROBERT FREDRICK FEDEL, B.S.
Alexandria, Virginia
Techniques and Factors Relating to Future Rapid Transit Demand.

JOSEPH LEON MIVILLE GAGNON, B.A., B.SC. *Jonquiere, Quebec*
Effect of a Gradual Change of Depth on a Train of Surface Waves. (With M. V. Bocco.)

FORREST THEODORE GAY, III, B.S.
Tampa, Florida
(See also S.M., Course XXII.)
Forced Convection in a Stratified Fluid by Air Injection. (With Z. Hagedorn, Jr.)

ZACH HAGEDORN, JR., B.S.
West Point, Georgia
(See also S.M., Course XXII.)
Forced Convection in a Stratified Fluid by Air Injection. (With F. T. Gay, III.)

TAHIR AHMAD KARAMAT, B.CIVIL ENG.
(September, 1961) *Karachi, Pakistan*
Theoretical Analysis of Dynamic Response of R. C. Beam-Column.

FREDERICK VAN BUREN LAWRENCE, JR., B.S. *Falmouth*
Seismic Wave Propagation in Granular Media.

PETER FRANKLIN MEHLHORN, S.B.
Fall River
Dispersion in Porous Media.

ARRIGO PIETRO MONGINI, S.B.
Roslindale
Pricing and Investment Policy for Metropolitan Passenger Transportation. (With F. P. Salvucci.)

KENNETH FRANK REINSCHMIDT, S.B.
Cincinnati, Ohio
Effect of the Variation of Load on the Dynamic Response of Concentrically Loaded Reinforced Concrete Columns.

FREDERICK PETER SALVUCCI, S.B.
Brighton
Pricing and Investment Policy in Metropolitan Passenger Transportation. (With A. P. Mongini.)

PIETRO SEMBENELLI, DOTT.ING.
Verona, Italy
Settlement Analysis on Clay Foundation.

RAYMOND KIRBY SULLIVAN, JR., S.B.
Framingham
Effects of Energy Dissipators on Wave Induced Oscillations in Harbors of Simple Planform.

PIERRE THIVIERGE, B.A., B.SC.
Quebec, Quebec
Behavior of Small-Scale Deep Beams of Reinforced Mortar under Static Loading. (With J. F. Chartrand.)

SERGIO LUIZ RAJA GABAGLIA TRAVASSOS
Graduate, Escola Naval *Newton*
(See also Nav.E., Course XIII-A.)
Optimization of Stiffened Plates.

GEORGE KENYON WITHERS, JR., B.S.
(See also S.M., Course XXII.) *Atlanta, Georgia*
Fast Neutron Attenuation Measurements. (With R. R. Blunt.)

Course II. Mechanical Engineering

GRIFFIN YEATMAN ANDERSON, S.B.
Milwaukee, Wisconsin
Experimental Study of Self-Sustained Oscillations in Diffusion Flames.

JOSEPH HENRY ARNDT, JR., S.B.
Erie, Pennsylvania
Prototype Development of a Semi-Permanent Photographic Data Storage and Retrieval System.

JAMES LAWSON COGGINS, B.S.
Brundidge, Alabama
Discharge Effects in a Cesium Diode.

RAYMOND GORDON COOK
McKeesport, Pennsylvania
(See also S.B., Course II.)
Response of a Nonlinear Two Degree of Freedom System to Random Excitation.

DAVID EARLE DANEY, B.S.
Pueblo, Colorado
Novel Air Liquefier Employing a Thermal Regenerator.

CORNELIS JOHANNES MARINUS DEN DULK, ING. *Heemstede, Netherlands*
Adsorption of Carbondioxode on Silicagel at Low Temperatures.

EDWARD FRANCIS DOYLE, III, S.B.
Dedham
Effect of Subcooling on Film Boiling in a Horizontal Tube.

ALEXANDER PETER McPHERSON GLASSFORD, B.SC. *Boston*
Gas Compressor Based on the Stirling Cycle.

SETH RICHARD GOLDSTEIN
New Rochelle, New York
(See also S.B., Course II.)
Investigation of High Reliability Hydraulic Servomechanisms.

DEEPAK MOHAN GUJRAL, S.B.
(January, 1962) *Lucknow, India*
Study of High Speed Punching.

JOHN BENJAMIN HEYWOOD, B.A.
Sidcup, England
Magnetogasdynamic Laminar Boundary Layer and Channel Flow Phenomena.

KAI FRED JOHANSEN, S.B.
Barrington, Illinois
Investigation of Electrochemical Machining.

KENNETH LEE LEBSOCK, S.B.
Moscow, Idaho
Analysis of the Azimuthal Control System on a Radar Tracking Antenna.

GUIDO ALBERT LEMKE, B.S.
Huntington, Indiana
Computer Design of Character Recognition Masks.

ROGER ANGELO LUCHETA, S.B.
Louisville, Kentucky
Experimental Study of Magnetogasdynamic Effects in Combustion.

PETER LUPESCU, B.M.E.
Dearborn, Michigan
Some Properties of Thin-Walled Beams.

WILLIAM JOSEPH CHARLES McCANDLESS, S.B. *Toledo, Ohio*
Effect of Hydrostatic Pressure on the Ductile Fracture of Copper.

JOHN STEWART MAULBETSCH, S.B. *Northampton*
Axial-Flow Compressor in the Free-Molecule Range.

PANGAL NARAYAN NAYAK, B.E. *New Delhi, India*
Sulphur as a Free Machining Additive to Low Carbon Steels.

GEORGE LEWIS NIEMEYER, JR., B.S. *Lake Forest, Illinois*
Determination of Optimum Spacing of Adjacent Horizontal Cylinders for Total Heat Flux and Heat Flux Per Unit Area.

WILLIAM WOODROW NOVAK, II, B.S. *Los Angeles, California*
Vibration Measurement of Gyroscope Bearing Compliances.

IOANNIS PSAROUTHAKIS, S.B. *Waltham*
Design, Construction and Testing of a Cesium Thermionic Energy Converter.

NICK ANTHONY RADOVCICH, B.M.E. *San Pedro, California*
Bubble Flow to Slug Flow Transition in Vertical Tubes.

KENNETH ALBERT RATHJEN, B.M.E. *Queens Village, New York*
Heat Transfer Probe Measurements as a Technique to Demonstrate Magnetohydrodynamic Containment.

DONALD GEORGE ROSEN, B.S. *Seattle, Washington*
Effect of Solidification Rate on the Formation of Delta Ferrite in Austenitic Iron-Chromium-Nickel Stainless Steel Welds.

ARTHUR MORTON SCHNEIDERMAN, S.B. *Belle Harbor, New York*
Experimental Study of a High Density Plasma in a "Magnetic Pipe."

ROBERT SHAW, JR., B.M.E. *Philadelphia, Pennsylvania*
Frictional Studies in Vacuum.

JOHN VICTOR SOLOMON, SC.B. IN ENGINEERING *Massapequa, New York*
Construction of a Two Phase Flow Regime Transition Detector.

DAVID WILSON STANLEY, S.B. *Guatemala, Guatemala*
Wall Shear Stress in Two Phase Slug Flow.

JOHN MORTON STOPFORD, B.A. *London, England*
Experimental Study on Mechanism of Self-Sustained Flame Oscillations.

PAUL ERIC THIESS, B.S. *Lake Oswego, Oregon*
(See also S.M., Course XXII.)
Dynamics of Solid Fueled Reactors by Distributed Parameter Methods.

RICHARD EVERETT THOMPSON, S.B. *Clarence Center, New York*
Size Determination of Solid Particles Present in Solid Propellant Products of Combustion.

GEORGE ANTHONY WEIR, B.A. *Kilwinning, Scotland*
Thermodynamic Properties of Helium at Low Temperatures and High Pressures.

SHOICHI YAMANAMI, KOGAKUSHI *Kumamotoken, Japan*
Study of Squeeze Action Damping.

PHILIP MING-YI YANG, B.S. *Taipei, Taiwan*
(January, 1962)
Friction Study and Boundary Lubrication under Varying Conditions.

Course III. Metallurgy

JUNGHI AHN, A.B., B.S. *Seoul, Korea*
Velocity of Dislocation in Iron Single Crystal.

LEIGH BUCHANAN BANGS, B.A. *Belmont*
Hysteresis of Contact Angles in the System Benzene-Water-Quartz.

ARUN KUMAR BISWAS, M.SC. *Cambridge*
Studies on Hysteresis of Contact Angle in Liquid-Liquid Solid Systems.

PIETER FREDERIK SUPHURIS BODENSTEIN, B.SC. *Pretoria, Republic of South Africa*
Fracture in Prestrained and Aged Aisi 4340.

GUY ROGER BONNET, DIPL.ING.
Ablon, France
Effect of Cold Work and Heat Treatment on the Corrosion of Nickel.

TERRY FREDERICK BOWER, S.B.
Old Saybrook, Connecticut
Dendrite Growth in Unidirectional Solidification.

JAMES FRANCIS CARLIN, JR., B.S.
Upper Darby, Pennsylvania
Solubility of Oxygen in Molten Silver.

PESI NARIMAN DASTUR S.B.
Bombay, India
Galvanic Cells with Solid Electrolyte for Measuring Oxygen Potential in Metallurgical Systems.

RONALD EDWARD ENSTROM, S.B.
(January, 1962) *Watertown*
Superconductivity and Structure of Sintered Nb_3Sn.

JOSEPH IRWIN GOLDSTEIN, S.B.
Syracuse, New York
Electron Microanalysis of Metallic Meteorites.

MICHAEL HYMAN, B.S.
(January, 1962) *New Rochelle, New York*
Effect of Deformation Temperature on the Recrystallization Kinetics of Pure Copper.

ARNOLD HENRY LENT, M.S.
New York, New York
Computer Study of the Size Effect in Solid Solutions.

LEANDER FERDINAND PEASE, III, S.B.
(January, 1962) *Woburn*
Phase Diagram of the System Tantalum-Zirconium.

MILTON DAY REED, S.B.
Muskegon, Michigan
Grain Size Effects in Iron-Nickel Austenite and Martensite.

HARVEY PAUL UTECH, S.B.
Alexandria, Virginia
Use of Transparent Liquids to Simulate Solidification of Large Castings and Ingots.

Ceramics

ARTHUR WAUGH, B.S. *(September, 1961)*
East Patchogue, New York
Study of Ceramic Bonded Alumina Abrasive Materials.

Course VI. Electrical Engineering

JOHN LOYD ALLEN, B.S. *Burlington*
Quantitative Examination of the Radar Resolution Problem.

STEPHEN JOHN ANGELOVICH, B.E.E.
Yonkers, New York
Zinc-Silver Peroxide Alkaline Reserve Cell.

ISAO ASAI, GAKUSHI *(September, 1961)*
Nagoya, Japan
(See also E.E., Course VI.)
Theoretical Analysis of Magnetic Modulators and its Experimental Verification.

MICHAEL EDWARD AUSTIN, B.S.E.E.
Weymouth
Threshold Study of Phase-Locked Loops.

JAMES HAYWARD BABCOCK, B.S.E.E.
Arlington
Design of Signals for Telephone Data Transmission.

JOHN ULRICH BEUSCH, B.S.
Erie, Pennsylvania
Dynamic Behavior of Linear, Coupled, Chemical Processes.

WILLIAM LAWRENCE BLACK, S.B.
Detroit, Michigan
Sequential Search.

LEON BRONSTEIN, B.ENG.
Hampstead, Quebec
Pressure Sensitivity of the Dielectric Constant of Liquids.

ROBERTO CESARE CALLAROTTI, B.S.E.E.
Caracas, Venezuela
Transverse Kerr Magneto-Optic Effect in Thin Magnetic Films.

RUDD HOOVER CANADAY, B.A.
(January, 1962) *Cambridge*
Description of Overlapping Figures.

GAY LORAN CARLEY, S.B.
Ardmore, Pennsylvania
Program to Play Contract Bridge.

RICARDO ANTONIO CARRERAS, S.B.
Miami Beach, Florida
Coordinate Converter for an Azimuth Elevation Mount.

PETER JOHN CHADWICK, S.M.
Oldham, England
Design Study of a Materials Testing Machine Control System. (S.M. Thesis, Course II, Feb., 1962.)

GERALD COOK, B.S. *Galax, Virginia*
Posicast vs. Conventional Types of Compensation in a Control System.

WILLIAM HITER CRABTREE, B.S.
Bluefield, Virginia
Adaptive Control by Continuous Calculation of the Optimum Control Laws.

JAMES WELD DAVIS, B.S.
Bainbridge Island, Washington
Investigation of Certain Parameters in the Binaural Hearing Mechanism.

PAUL MICHAEL EBERT, B.S.
Watertown, Wisconsin
Entropy in Printed English.

CHARLES ALFRED FINNILA, B.S.
Larkspur, California
Convenient Eye Position and Pupil Size Meter.

DAVID HENRY FRIEDMAN, B.E.E.
Long Beach, New York
Associative Literature Search Using a Man-Machine System.

LEWIS KINGSBURY GLANVILLE, B.S.
Northbrook, Illinois
Scanner for Character Recognition Studies.

RICHARD LEWIS GREENSPAN, S.B.
(January, 1962) *Brooklyn, New York*
Lightweight Radar for Terrain Observation.

WILLIAM DAVID GREGG, B.S.E.E.
Hill Top, West Virginia
Characteristics of an Adaptive Control Principle by Digital Simulation.

MARIO CARLOS GRIGNETTI, ING.IND.
Montevideo, Uruguay
Bichannel Communications System.

STUART JEFFERY HALL, B.S.E.E. *Nahant*
Resistive Heating for Epitaxial Crystal Growth.

HAROLD MARTIN HEGGESTAD
(See also S.B., Course VI.) *Lowry, Minnesota*
Sweep Integration System Using Frequency Modulation.

YUKIKAZU IWASA
(See also S.B. & S.M., Course II.) *Kyoto, Japan*
Thesis Submitted to Department of Mechanical Engineering.

ROBERT SAMUEL KAPLAN, S.B.
Bronx, New York
Digital Computer for Use in Missile Simulation Studies.

SHERMAN KARP, S.B. *Belmont*
Analysis of a Noisy Decision-Feedback Communications System.

PETER GEZA KATONA, B.S.E.
Ann Arbor, Michigan
Analysis of Blood-Pressure Regulation Using Correlation Techniques.

ROBERT LOUIS LAGACE, S.B. *Fall River*
Circular Cylinder $CSC^2\theta$ Antenna.

WALDEMAR HENRY LEHN, B.SC.
Winnipeg, Manitoba
Feasibility of a Guidance System for a Small Rocket Lift Device.

FRANK ANDERSON LEITH, E.E.
(September, 1961) *Cincinnati, Ohio*
Study of the Effects of Fast Neutrons on Silicon Controlled Rectifiers.

ARTHUR HARVEY LIPTON, S.B.
Woodmere, New York
Open Loop Digital Compensation of a Positional Servomechanism.

NELSON CHARLES MAYNARD, B.S.
Concord, New Hampshire
Trapping of Electrons and Holes in Mixed Crystals.

SOHEIR TAKLA MELEIKA, B.SC.
Giza, Egypt
Large Signal Exact Solution for the Abrupt-Junction Divide-by-Four Circuit.

HELMUT INGO MILDE, DIPL.ING.
Cambridge
Production and Control of a High-Energy Neutral-Particle Beam.

FLOYD McEWEN MINKS, B.S.
Chester, New Hampshire
Electronically Controlled Fuel Injection System for an Internal Combustion Engine.

MARCO ANTONIO MURRAY LASSO, ING.MECH.ELEC. *Mexico, D.F., Mexico*
Matrix Transformations in Circuit Theory.

WILLIAM JOSEPH PATERSON, B.S.
Kincaid, Illinois
Response of a Discontinuously Damped Servomechanism to Various Inputs.

JOHN PROAKIS, E.E.
(September, 1961) *Weirton, West Virginia*
Sequential Analysis with Applications to Radar Detection.

PHILIP JOHN RASCH, B.S.
New Orleans, Louisiana
The Hallsyn—A Hall Effect Angular Displacement Signal Generator.

JOEL BARNET RESNICK, B.E.E. *Arlington*
High Resolution Waveforms Suitable for a Multiple Target Environment.

JAMES KERR ROBERGE, S.B.
Union City, New Jersey
Design of Spacecraft Radar Systems for Investigation of the Planet Venus.

STEPHEN BARRY RUSSELL, S.B.
Marblehead
Infrared Longitudinal Kerr Magneto-optic Effect in Ferromagnetic Thin Films.

HOWARD CHARLES SALWEN, B.S.
Jamaica, New York
Methods for Determining Coefficients of Optimum Systems.

DONALD RALPH SCHERTZ, B.S.E.E.
(September, 1961) *Lowpoint, Illinois*
Digital Calculation of Optical Parameters of Thin Films.

JAMES COSTAS SETHARES, B.S. in E.E.
Hyannis
Lagrangian Coordinate Power Formulas.

RICHARD OWEN SHAFFNER, B.S.
Chicago, Illinois
Stimulated Afterglow in Neon Gas.

SUNG JAI SOHN, B.S. *Seoul, Korea*
Dynamic Range of a Parametric Amplifier.

RICHARD NELSON SPANN, S.B.
Chicago, Illinois
Real-Time Computation with Infinite Automata.

RICHARD BARRY SWERDLOW, B.S.E.E.
Philadelphia, Pennsylvania
Optimum Control of a Stirred-Tank Chemical Reactor.

HONG SIANG TAN, B.SC. *Klang, Malaya*
Co-ordinate Systems for Field Problems.

FRANK MICHAEL TRANTANELLA, S.B.
Stamford, Connecticut
Design of a High-Speed Page Reader.

MAHMOUD WANAS ABD-EL-ZAHER WANAS, B.SC. *Cairo, Egypt*
Multiple-Part Semiconductor Capacitor Diode Frequency Converters.

TERRY ARCHER WELCH, S.B.
Columbus, Ohio
Measure of Computer Information Processing Capacity.

ROBERT JOHN WENZEL, B.S.E.E.
Milwaukee, Wisconsin
Speech Compression Studies.

RICHARD PHILIP WILLIAMSON, JR., S.B.
Watertown
Gyrocompass Error Averaging Technique.

STEWART WADE WILSON, S.B.
Penfield, New York
Machine for Answering Students' Questions in Physics.

ROBERT WAYNE WITTE, A.B., S.B.
Boston
Synthesis of Several Sets of Orthogonal Functions.

JOHN EDWARD YATES, S.B.
Seattle, Washington
Time Sharing System for the PDP-1 Computer.

Course X. Chemical Engineering

HAIM HENRY ALCALAY, S.B.
Tel-Aviv, Israel
Attended School of Chemical Engineering Practice in Lieu of Thesis.

MICHAEL ALEXANDER BILYK, S.B.
Bayonne, New Jersey
Attended Engineering Practice School in Lieu of Thesis.

URIEL GAD CEGLA, DIPL.ING.
Tel-Aviv, Israel
Attended School of Chemical Engineering Practice in Lieu of Thesis.

CHANG WHAN CHI, S.B. *Seoul, Korea*
Attended School of Chemical Engineering Practice in Lieu of Thesis.

KARL DOUGLAS CUMMINGS, B.S.
Medford, Oregon
Attended School of Chemical Engineering Practice in Lieu of Thesis.

CHARLES MICHAEL DONOHUE, B.S.CH.E.
(September, 1961) *Needham*
Membrane Separation of Isomeric Chloroethylbenzenes.

BRUCE ROBERTSON DUGGAR, B.E.
St. Petersburg, Florida
Attended School of Chemical Engineering Practice in Lieu of Thesis.

TOMOKI EGUCHI, RI-GAKUSHI
Fukuoka-Ken, Japan
Attended School of Chemical Engineering Practice in Lieu of Thesis.

MARTIN LOUIS FALXA, S.B.
Buffalo, Wyoming
Attended School of Chemical Engineering Practice in Lieu of Thesis.

MALCOLM DOUGLAS FRASER, S.B.
(January, 1962) *Pittsburgh, Pennsylvania*
Attended Engineering Practice School in Lieu of Thesis.

HENRY LEWIS GABELNICK, S.B. *Allston*
Attended School of Chemical Engineering Practice in Lieu of Thesis.

JEAN-PAUL GARRIC, ING. *Paris, France*
Attended School of Chemical Engineering Practice in Lieu of Thesis.

MORRIS MEYER GOLDBERG, B.CH.E.
Brooklyn, New York
Attended School of Chemical Engineering Practice in Lieu of Thesis.

CHANG DAE HAN, B.S. *Seoul, Korea*
Second-order Transition Temperatures of Highpolymers.

GRADY WILLIAM HARRIS, S.B.
Atlanta, Georgia
Attended School of Chemical Engineering Practice in Lieu of Thesis.

BHUPENDRA NANALAL KHETANI, S.B.
Bombay, India
Behavior of Magnesium as Consumable Anode.

GERALD MELVYN LEVINE, B.A., S.B.
Duluth, Minnesota
Attended School of Chemical Engineering Practice in Lieu of Thesis.

JAMES LAWRENCE MANGANARO, S.B.
New Hyde Park, New York
Attended Engineering Practice School in Lieu of Thesis.

ALVIN DOYLE MARTIN, JR. S.B.
Baton Rouge, Louisiana
Attended School of Chemical Engineering Practice in Lieu of Thesis.

JOHN PAUL O'CONNELL, A.B., S.B.
Santa Ana, California
Hydrocarbon Reactions in Fluidized Beds of Iron Ore.

MICHEL POULAIN, ING. *Paris, France*
Attended School of Chemical Engineering Practice in Lieu of Thesis.

VASILIOS STAVROS SALAPATAS, DIPL.
(September, 1961) *Athens, Greece*
Iron Removal from Molten Alumina-Cryolite Systems.

JOSEPH RICHARD SKENDERIAN, S.B.
Belmont
Attended School of Chemical Engineering Practice in Lieu of Thesis.

EDWARD LESTER TUCKER, S.B. *Boston*
Attended School of Chemical Engineering Practice in Lieu of Thesis.

LUCIEN GUY JEAN VIALLE, DIPL.ENG.
Verrieres-le-Buisson, France
Attended School of Chemical Engineering Practice in Lieu of Thesis.

JOHN RAYMOND ZASKALICKY, A.B.
Shelton, Connecticut
Attended School of Chemical Engineering Practice in Lieu of Thesis.

Course X-A. Chemical Engineering Practice

SURENDAR MOHAN JAIN, M.S.
Bhatinda, India
Attended School of Chemical Engineering Practice in Lieu of Thesis.

DAVID WESLEY REED, S.M.
Pittsburgh, Pennsylvania
Attended School of Chemical Engineering Practice in Lieu of Thesis.

ALEXANDER GREGORY ROSS, S.B.
Honolulu, Hawaii
Attended School of Chemical Engineering Practice in Lieu of Thesis.

Course XI. Sanitary Engineering

GUY JOSEPH GÉRARD AUDET, B.SC.A.
Quebec, Quebec
Comprehensive Study of Composting of Organic Wastes.

CARL ARTHUR BAUER, JR., B.S.
Watertown
Removal of Ruthenium from Low Level Radioactive Wastes by Adsorption on Organic Material.

GEORGE EDMUND BENNETT, B.S.C.E.
Keokuk, Iowa
Growth Factor Requirements of Methane Bacteria.

FERNAND JOSEPH-ANDRÉ GUÉRIN, B.SC.A. *Ste. Catherine, Quebec*
Copper Toxicity in Anaerobic Digestion.

RICHARD WALLACE SULLIVAN, B.S.
Brookline
Biodegradability of Some Commercial Liquid Synthetic Detergents.

Course XIII. Naval Architecture and Marine Engineering

THEODORE VASSILIOS EFSTATHIOU, S.B.
Cambridge
On the Generalized Solution of the Buckling of Columns with Application to the Buckling of Grillages.

HITOSHI NARITA, KOGAKUSHI
Nagoya, Japan
Step Response Analysis of Damping and Virtual Inertia of a Pitching Ship Model.

ZVI ZARHY, ING. *Haifa, Israel*
Evaluation of Longitudinal Bending Moments Experienced by a Ship in a Seaway.

Course XVI. Aeronautics and Astronautics

EDGAR ALZNER, B.ENG. *Montreal, Quebec*
Point Injection on a Blunt Body.

GARY CARL BAGNARD, B.S.
Lakewood, California
Statistical Probabilities of Gyro Drift Models.

DAVID EMMITT BRANDT, B.S.
Washington, D. C.
Investigation of Rotor Blade Dynamics during Equilibrium Transition Flight.

MICHAEL GEORGE BUCHEN, B.S.
Cambridge
Application of Polynomials Orthogonal over an Infinite Range to the Strip Method of Boundary Layer Solution.

CHARLES MORGAN BUTLER, B.S.
Columbia, Tennessee
Investigation of the Feasibility of Indicating Altitude by Gravimetric Measurements. (With N. M. Haller.)

JOHN KNEELAND DAVIDSON, B.S.
Tyler, Texas
Legendre Polynomials Applied to the Strip Method for Solving the Compressible Boundary Layer Equations with Electrical Effects.

REINER DECHER, B.A.E.
Trumbull, Connecticut
Behavior of a Binary Mixture of Gas in a Prandtl-Meyer-Like Turn.

YAAKOV ELKON, ING. *Tel-Aviv, Israel*
Theoretical Studies and Shock-Tube Measurements of Subsonic Step-Blast Loads on a 35° Sweptback Wing.

LEE ALEXANDER FARMELO, B.S.
Elkland, Pennsylvania
Criteria for the Design of the Model of a Model Reference Control System. (With J. W. Sammon, Jr.)

NORMAN MEHLHORN HALLER, B.S.
Columbus, Ohio
Investigation of the Feasibility of Indicating Altitude by Gravimetric Measurements. (With C. M. Butler.)

JOHN FREEMAN HARVELL, B.S.
Xenia, Ohio
Application of Inertial Guidance to Photogrammetry.

ARTHUR DAVID JONATH, S.B. *Danvers*
Effect of the Moon on an Infinitesimal in Hyperbolic Escape from Earth.

MARSHALL HARVEY KAPLAN,
B.S. IN AE.E. *Detroit, Michigan*
Free Molecular Diffuser.

ROY VINCENT KEENAN, B.SC.
Lexington, Nebraska
Star Occultation Measurements as an Aid to Navigation in Cis-Lunar Space. (With J. D. Regenhardt.)

JAMES LAWRENCE KNOEDLER, S.B.
Roswell, New Mexico
Correction of Guidance and Control Errors in Return Trajectories from Extremely High Altitude Earth Orbits.

HARRY G KWATNY, B.S.
Philadelphia, Pennsylvania
Limit Cycle Characteristics of Nonlinear Systems with a Random Noise.

ERNEST McCUBBIN, B.A.SC.
Ottawa, Ontario
Errors of a Single Degree of Freedom Integrating Gyroscope in a Vibrational Environment. (With D. F. Reid.)

FRANK McCOY McMULLEN, B.S.
San Antonio, Texas
Approximate Calculations for a Manned Lunar Landing Mission.

MACK MAULDIN, JR., B.S. *Watertown*
Optimization of Interplanetary Mid-Course Velocity Corrections. (With R. G. Millard.)

ROBERT GEORGE MILLARD, B.S. *Bedford*
Optimization of Interplanetary Mid-Course Velocity Corrections. (With M. Mauldin, Jr.)

HENRY RALPH PIEHLER, S.B.
East Paterson, New Jersey
Mechanical Properties of Silver-Steel Composite Materials.

JOHN DONALD REGENHARDT, B.S.
Cape Girardeau, Missouri
Star Occultation Measurements as an Aid to Navigation in Cis-Lunar Space. (With R. V. Keenan.)

LAWRENCE WILMER REHFIELD, B.A.E.
Miami, Florida
Buckling of Shallow Orthotropic Conical Shells Under Axisymmetrical Lateral Pressure.

DANIEL FRED REID, B.S.
Villas, New Jersey
Errors of a Single Degree of Freedom Integrating Gyroscope in a Vibrational Environment. (With E. McCubbin.)

EARLE GEORGE ROBY, B.S.E.E.
China Lake, California
Proposed Strap-Down Inertial System for a Supersonic Airliner. (With W. R. Roehrs.)

WALTER ROBERT ROEHRS, B.S.
China Lake, California
Proposed Strap-Down Inertial System for a Supersonic Airliner. (With E. G. Roby.)

JOHN WILLIAM SAMMON, JR., B.S.
Hamburg, New York
Criteria for the Design of the Model of a Model Reference Control System. (With L. A. Farmelo.)

LEROY EARL SNARE, B.A., M.S.
Indianapolis, Indiana
Improved Method of Indicating Ships Speed during Maneuvers.

EDWARD AARON SPITZER, B.E.E. *Newton*
Preliminary Analysis of a Digital Tumbling Loop.

LEO WARREN STOCKHAM, B.S.
Hutchinson, Kansas
Investigation of Negative Ion Production. (With J. A. Schira, Jr., E.A.A., Course XVI.)

ARTHUR ABBOTT SUTHERLAND, JR., B.AERO.E. *Queens Village, New York*
Some Effects of Disc Loading on Performance and Direct Operating Costs of VTOL Aircraft.

DURGA SUBRAHMANYA PRASAD VARANASI, M.SC. *Nuzvid, India*
Panel Flutter in the Presence of a Vortical Layer in Hypersonic Flow.

Course XVII. Building Engineering and Construction

KREON LOUIS CYROS, S.B.
St. Louis, Missouri
Study of a Small Scale Engineering Computer Center in the New England Area.

JACK ROBERTS FARMER, JR., B.S.
Camdenton, Missouri
Digital Computer Solution to the Critical Path Problem and an Approach to Resource Allocation.

DONALD ROWLAND PENNELL, B.S.
Seattle, Washington
Computer Solution for Critical Path Networks.

EVERETT JOSEPH TINGLEY, S.B.
Abington
Feasibility Study of Private Construction as a Means of Providing Low Cost Housing in Underdeveloped Countries.

Course XXII. Nuclear Engineering

JOSÉ CARLOS DE ALMEDIA AZEVEDO, *Graduate, Escola Naval* *Belmont*
(See also S.M., Course VIII.)
Thesis Submitted to Department of Physics.

MARTIN BECKER, B.E.S.
New York, New York
Oscillations in a Cesium-filled Thermionic Converter.

ROGER RECKLING BLUNT, B.S.
East Providence, Rhode Island
(See also S.M., Course I.)
Thesis Submitted to the Department of Civil Engineering.

STEPHEN ODELL DEAN, JR., B.S.
Lewiston, New York
Attended Engineering Practice School in Lieu of Thesis.

ELIA PANDI DEMETRI, B.S. *Somerville*

Attended Engineering Practice School in Lieu of Thesis.

FORREST THEODORE GAY, III, B.S.
Tampa, Florida

(See also S.M., Course I.)

Thesis Submitted to Department of Civil Engineering.

ZACH HAGEDORN, JR., B.S.
West Point, Georgia

(See also S.M., Course I.)

Thesis submitted to Department of Civil Engineering.

ATHANASIOS JOHN NIKOLITSAS, DIPL.
Cambridge

Degraded Fission Neutron Energy Spectrum.

NAM CHIN PAIK, S.B. *Seoul, Korea*

Investigation of High-Energy Gamma Rays by Triple Coincidence Pair Spectrometer.

LESTER MARSHALL PETRIE, JR., B.CH.E.
Decatur, Georgia

Determination of Radiolytic Degradation in Organic Coolants.

PAUL ERIC THIESS, B.S.
Lake Oswego, Oregon

(See also S.M., Course II.)

Thesis Submitted to Department of Mechanical Engineering.

ARNALDO TURRICCHIA, DOTT.ING.
Bologna, Italy

Dose Rate Measurements by Means of Adiabatic Calorimeters and a Miniature Ionization Chamber.

JACK NORMAN WILSON, B.CH.E.
Bergenfield, New Jersey

Neutral Particle Burnout in an Ion Injection Machine.

GEORGE KENYON WITHERS, JR., B.S.
Atlanta, Georgia

(See also S.M., Course I.)

Thesis Submitted to the Department of Civil Engineering.

CIVIL ENGINEER

(Also Master of Science in Civil Engineering where indicated)

Course I. Civil Engineering

ANTHONY KOBINA AMOS, B.ENG.
Salt Pond, Ghana

(Also recipient of S.M. degree.)

Tensile Cracks in Reinforced Concrete Structural Elements.

SHYAM DATTA SHARMA, S.M.
Cambridge

Dynamic Response of Eccentrically Loaded Reinforced Concrete Columns (S.M. Thesis, 1961.)

AVINASH CHANDRA SINGHAL, S.M.
(January, 1962) *Aligarh, India*

Utilization of Digital Computers in the Analysis of Shells of Revolutions Undergoing Symmetrical Deformations.

MECHANICAL ENGINEER

Course II. Mechanical Engineering

KHUSHI LADHARAM CHANDIRAMANI, S.M. *Bombay, India*
Investigation of Surface-Finish and Built-up-edge Formation. (S.M. Thesis, 1962)

HARRY H KEITH, JR., S.M. *Annapolis, Maryland*
Design and Construction of a High-Temperature Vacuum Furnace for Compression and Tension Testing. (S.M. Thesis, 1961)

ALFRED BAEHRENS LANG, M.S.E. *Concord*
Analysis and Design of Universal Metal Processing Machine.

CHONG-JIN LEE, S.M. *Tae-Gu, Korea*
Two-Phase Two-Component Flow in an Ejector. (S.M. Thesis, 1961.)

PHILIP JOSEPH MULLAN, S.M. *Brighton*
Investigation of Cavitating Inducers for Turbopumps. (S.M. Thesis, 1959.)

HERBERT WEINSTOCK, S.M. *New York, New York*
Study of the Response of the Single Degree of Freedom Integrating Gyroscope to Angular Vibrations. (S.M. Thesis, 1960.)

METALLURGICAL ENGINEER

(Also Master of Science in Metallurgy where indicated)

Course III. Metallurgy

WILLIAM HOWARD FERGUSON, JR., S.B. *Fort Worth, Texas*
(Also recipient of S. M. degree.)
Tantalum-Iridium Constitution Diagram.

MELVILLE CARL SHINE, JR., S.M. *Newton Centre*
Mechanical Properties of Fibrous Tungsten.

ELECTRICAL ENGINEER

(Also Master of Science in Electrical Engineering where indicated)

Course VI. Electrical Engineering

ISAO ASAI, S.M.
(See also S.M., Course VI.) *Nagoya, Japan*
Theoretical Analysis of Magnetic Modulators and Its Experimental Verification (S.M. Thesis, 1961).

ALLAN JOSEPH ATRUBIN, S.M. *Cambridge, Mass*
Study of Several Planar Iterative Switching Circuits (S.M. Thesis, 1958).

PIERRE ROLLAND BÉLANGER, S.M. *Montreal, Quebec*
Characteristics of the Human Operator in an Open Loop (S.M. Thesis, 1961).

NELSON EDWARD BOLEN, S.M. *Mansfield, Ohio*
Thermal Stability of Silicone Carbide Nonlinear Resistors (S.M. Thesis, 1960).

CARL McALVAY FERRAR, S.M.
Okomos, Michigan
Range Gating System for Research on Sightless Navigation (S.M. Thesis, 1960).

ROBERT PARROTT HUNT, S.M.
Dayton, Ohio
Torque Magnetometer for Crystalline Anisotropy Measurements (S.M. Thesis, 1960).

GEORGE ELDON KEITH, JR., S.M.
Cambridge
On the Design of Large Diode Logic Circuits (S.M. Thesis, 1962).

PIETER JOZEF LUYPAERT, S.M.
Ghent, Belgium
Two Terminal Transistor Oscillators.

FERDINAND VERLAND NEIDER, B.E.E.
(Also recipient of S.M. degree.) Waltham
Position Determination of a Co-operative Artificial Satellite.

GLENN CHARLES RANDA, M.S.
(January, 1962) Endicott, New York
Design of a Remote Display Console.

JOHN JULIAN UEBBING, A.B., B.S.
(Also recipient of S.M. degree.) Chicago, Illinois
Hollow Electron Beams from Hollow Cathodes.

JOHN A VAN RAALTE, JR., S.M.
Princeton, New Jersey
Transistor Characterization for VHF Amplifier Design (S.M. Thesis, 1960).

WOLFHART KARL HERMANN ARTHUR WEIDEMANN, S.M.
Pretoria, Republic of South Africa
Reactivity Monitor for the M.I.T. Reactor (S.M. Thesis, 1961.)

CHARLES EMERSON WERNLEIN, JR., S.M.
New York, New York
Saddlepoint Method of Transient Analysis (S.M. Thesis, 1958).

CLAY THOMAS WHITEHEAD, S.M.
Columbus, Kansas
Inspection for Arms Control (S.M. Thesis, 1961).

CHEMICAL ENGINEER

Course X. Chemical Engineering

ANDREW JOHN ROBELL, S.M.
Berkeley, California
Attended Engineering Practice School in Lieu of Thesis.

SANITARY ENGINEER

Course XI. Sanitary Engineering

RONALD DUNSTAN AMOROSO, S.M.
Barataria, Trinidad
Relation between the Biochemical Oxygen Demand and the Suspended Solids in Sewage Effluents.

NAVAL ARCHITECT

Course XIII. Naval Architecture and Marine Engineering

NGUYEN TRUONG HUU, S.M.
Saigon, Vietnam
Torsional Stresses in Propeller Blades.

FENDALL MARBURY, JR., S.M.
Baltimore, Maryland
Push-Towing in Waves.

NAVAL ENGINEER

(Also Master of Science in Naval Architecture and Marine Engineering)

Course XIII-A. Naval Construction and Engineering

ANTONIO GALVÃO PASSOS ARAUJO
Rio de Janeiro, Brazil
Graduate, Escola Naval
Non-Linear Analysis of a Servo-Mechanism.

MARCELO DARWIN ARCOS EGRED
Quito, Ecuador
Graduate, Ecuadorian Naval Academy
(See also S.M., Course I)
Investigation of Material Properties on the Minimum Weight Design of Stiffened Deck Plating.

DUANE UBBE BEVING, B.S. *Ackley, Iowa*
Optimization of Parameters for a Nuclear Gas Turbine Plant.

RICHARD FRANCIS BURNS, B.S.
Detroit, Michigan
Investigation of the Coupling between Longitudinal and Flexural Modes of Vibration Caused by an Offset of the Center of Gravity from the Center of Stiffness.

CARLOS MARIO CHARNECO, JR., B.S.
San Diego, California
Effects of Closing Angle and Proximity of Free Surface on Separation on a Submerged Body of Revolution. (With S.W. Layn.)

NICHOLAS JAMES DE NUNZIO, B.S.
Morristown, New Jersey
Probability of Damage to an Aircraft Carrier from an Underwater Explosion. (With J. J. Macan.)

IAN BAXTER ENGH, B.SC. *Guelph, Ontario*
Design of Aluminum Deckhouses to Resist Nuclear Air Blast.

THOMAS ARNOLD PERCY EYRE
Saskatoon, Saskatchewan
Analyses of Precoupled Gas Turbines in Ships.

DAVID BROCKMAN FLANAGAN, B.S.
Richmond, Virginia
Automatic Control of Propeller Pitch.

DOUGLASS FREDERICK HAYMAN, JR., B.S.
Shelton, Nebraska
Optimization of Naval Propulsion Machinery. (With H. H. Otto.)

VERNON CHAPIN HONSINGER, B.S.
Springfield
Wave-Induced Vibrations in Fixed Offshore Structures. (With W. C. Nolan.)

GEORGE LYNN JOHNSON, B.S.
Coronado, California
Orthotropic Shell Analysis of a Ship's Bottom Section.

ARTHUR EDWIN KEEGAN, B.S.
Jersey City, New Jersey
Influence of Hull Resiliency on the Response of Shipboard Equipment to Shock.

SAMUEL WARREN LAYN, B.S.
Coolidge, Arizona
Effects of Closing Angle and Proximity of Free Surface on Separation on a Submerged Body of Revolution. (With C. M. Charneco, Jr.)

JOHN JOSEPH MACAN, B.S.
Omaha, Nebraska
Probability of Damage to an Aircraft Carrier from an Underwater Explosion. (With N. J. De Nunzio.)

FRANCIS HENRY MOLIN, B.S.
Alhambra, California
Response of a Shaft to Transverse Shock.

WILLIAM CRAIG NOLAN, B.S. *Swampscott*
Wave-Induced Vibrations in Fixed Offshore Structures. (With V. C. Honsinger.)

HAROLD HOWARD OTTO, B.E.
Dartmouth, Nova Scotia
Optimization of Naval Propulsion Machinery. (With D. F. Hayman, Jr.)

HARLAN DAVID SWANSON, JR., B.S.
Knoxville, Tennessee
Theoretical Investigation of Slamming Loads on a Three Dimensional Shape.

HUGO WASHINGTON TOBAR VEGA
Latacunga, Ecuador
Graduate, Ecuadorian Naval Academy
Nuclear Reactor Shielding Weight Minimization.

SERGIO LUIZ RAJA GABAGLIA TRAVASSOS *Rio de Janeiro, Brazil*
Graduate, Escola Naval
(See also S. M., Course I.)
Study of a Nonlinear System.

ENGINEER IN AERONAUTICS AND ASTRONAUTICS

(Also Master of Science in Aeronautics and Astronautics where indicated)

Course XVI. Aeronautics and Astronautics

ROBERT PHILIP HUDOCK, S.M.
Hazelton, Pennsylvania
Determination of Minimum Approach, Landing, and Takeoff Interval. (S.M. Thesis, 1961.)

CHARLES JOSEPH JANUSKA, B.S. IN ELEC.ENG. *Cleveland, Ohio*
(Also recipient of S.M. degree.)
Optimum Statistical Operations with Celestial Fix Data for Interplanetary Navigation. (With D. R. Scott and R. E. Willes.)

WILLIAM WILFRED McKENNA, S.M.
Reedsville, Pennsylvania
Effect of Drift in the Inertial Reference on the Performance of an Inertial Navigation System.

ALBERT ERNEST PREYSS, S.B.
New York, New York
(Also recipient of S.M. degree.)
Ascent Guidance.

JOHN ALBERT SCHIRA, JR., B.S.
Solon, Ohio
(Also recipient of S.M. degree.)
Investigation of Negative Ion Production. (With L. W. Stockham, S.M., Course XVI.)

DAVID RANDOLPH SCOTT, B.S.
La Jolla, California
(Also recipient of S.M. degree.)
Optimum Statistical Operations with Celestial Fix Data for Interplanetary Navigation. (With C. J. Januska and R. E. Willes.)

RICHARD ERROL WILLES, B.S.
Fort Pierce, Florida
(Also recipient of S.M. degree.)
Optimum Statistical Operations with Celestial Fix Data for Interplanetary Navigation. (With C. J. Januska and D. R. Scott.)

MATERIALS ENGINEER

WILLIAM HARDY HASLETT, JR., S.M.(XVII) *Duxbury*
Shrinkage Pressure in Thermosetting Resins.

DOCTOR OF SCIENCE

MARSHALL EDWARD ALPER
Los Angeles, California

Awarded the degree of Bachelor of Science, 1951, Massachusetts Institute of Technology. Thesis in Civil Engineering: *Model Study of a Thin Shell Roof.*

LUIZ CARLOS BAHIANA
Rio de Janeiro, Brazil

Awarded the degrees of Graduate, 1951, Brazilian Naval Academy, and Master of Science, 1958, and Electrical Engineer, 1959, Massachusetts Institute of Technology. Thesis in the Department of Electrical Engineering: *Electromagnetic Induction on an Expanding Conducting Sphere.*

CHARLES ADOLPH BERG *Houston, Texas*

Awarded the degrees of Bachelor of Science, 1956, Master of Science, 1958, and Mechanical Engineer, 1961, Massachusetts Institute of Technology. Thesis in the Department of Mechanical Engineering: *Influence of Viscous Deformation on Brittle Fracture.*

CRISTOBAL BONIFAZ ANDRADE
Quito, Ecuador

Awarded the degree of Bachelor of Engineering Science, 1956, Johns Hopkins University, and Master of Science, 1957, Columbia University. Thesis in the Department of Chemical Engineering: *Distribution of Residence Times in Short Fixed Beds.*

JOSÉ MARIA BORREGO LARRALDE
(September, 1961) *Boston*

Awarded the degrees of Mechanical Engineer, 1955, Instituto Tecnologico y de Estudios Superiores de Monterrey, Mexico, and Master of Science, 1957, Massachusetts Institute of Technology. Thesis in the Department of Electrical Engineering: *Optimum Impurity Concentration in Semiconductor Thermo-Elements.*

FORBES TAYLOR BROWN *Newton*

Awarded the degrees of Bachelor of Science and Master of Science, 1958, and Mechanical Engineer, 1959, Massachusetts Institute of Technology. Thesis in the Department of Mechanical Engineering: *Pneumatic Pulse Transmission with Bistable-Jet-Relay Reception and Amplification.*

RAYMOND ELDON CAIRNS, JR. *Needham*

Awarded the degrees of Bachelor of Science, 1954, and Master of Science, 1960, Massachusetts Institute of Technology. Thesis in Metallurgy: *Brittle to Ductile Fracture Transition Temperature of Chromium.*

GEDEON IMRE DEAK *Buffalo, New York*

Awarded the degree of Master of Science, 1958, Lehigh University. Thesis in the Department of Mechanical Engineering: *Study of the Causes of the Bauschinger Effect.*

SHELDON WILLIAMS DEAN, JR.
(January, 1962) *Westfield, New Jersey*

Awarded the degees of Bachelor of Arts, 1958, Middlebury College, and Bachelor of Science, 1958, Massachusetts Institute of Technology. Thesis in the Department of Chemical Engineering: *Contact Angle Hysteresis on Gel Surfaces.*

RICHARD PAUL DE FILIPPI
New York, New York

Awarded the degrees of Bachelor of Arts, 1957, Amherst College, and Master of Science, 1959, Massachusetts Institute of Technology. Thesis in the Department of Chemical Engineering: *Transport of Liquids in Structurally Modified Polyethylene.*

ALVIN WILLIAM DRAKE *Allston*

Awarded the degrees of Bachelor of Science and Master of Science, 1958, and Electrical Engineer, 1961, Massachusetts Institute of Technology. Thesis in the Department of Electrical Engineering: *Observation of a Markov Process Through a Noisy Channel.*

ROBERT BENTLEY FLEMING
Schenectady, New York

Awarded the degrees of Bachelor of Science in Mechanical Engineering, 1950, Purdue University, and Master of Science, 1959, Massachusetts Institute of Technology. Thesis in the Department of Mechanical Engineering: *Application of Thermal Regenerators to the Production of Very Low Temperatures.*

DAVID NICHOLS FRENCH *Lexington*

Awarded the degrees of Bachelor of Science, 1958, and Master of Science, 1959, Massachusetts Institute of Technology. Thesis in Metallurgy: *Solidification of Aqueous Solutions.*

WARD DOUGLAS GETTY *Detroit, Michigan*

Awarded the degrees of Bachelor of Science in Electrical Engineering and Bachelor of Science in Mathematics, 1955, and Master of Science, 1956, University of Michigan. Thesis in the Department of Electrical Engineering: *Investigation of Electron-Beam Interaction with a Beam-Generated Plasma.*

CHI-YEH HAN *West Hartford, Connecticut*

Awarded the degrees of Bachelor of Engineering, 1948, National Northwest College of Engineering, and Master of Science, 1959, Michigan State University. Thesis in the Department of Mechanical Engineering: *Mechanism of Heat Transfer in Nucleate Boiling.*

FRANK JOSEPH HEGER

(January, 1962) *Needham*

Awarded the degrees of Bachelor of Science, 1948, and Master of Science, 1949, Massachusetts Institute of Technology. Thesis in Civil Engineering: *Theory for the Structural Behavior of Precast Reinforced Concrete Pipe.*

KAYAKO TANAKA HIRANO

(Posthumous Award) *Hamamatsu-shi, Japan*

Awarded the degree of Ko-Gakushi, 1952, Tokyo Kogyo Daigaku. Thesis in Metallurgy: *Microslip in Copper.*

LAWRENCE CLAY HOAGLAND *Concord*

Awarded the degrees of Bachelor of Mechanical Engineering, 1954, General Motors Institute, Master of Science, 1955, and Mechanical Engineer, 1956, Massachusetts Institute of Technology. Thesis in the Department of Mechanical Engineering: *Turbulent Flow in Straight Rectangular Ducts—Secondary Flow, Its Cause and Effect on the Primary Flow.*

SIGURD HOYER *Peabody*

Awarded the degrees of Bachelor of Science, 1956, and Master of Science, 1957, Massachusetts Institute of Technology. Thesis in the Department of Mechanical Engineering: *Investigation of Some Gyroscopic Phenomena.*

CHARLES T. HUGHES

Grand Island, New York

Awarded the degree of Bachelor of Chemical Engineering, 1950, Clarkson College of Technology. Thesis in the Department of Chemical Engineering: *Effect of Orientation and Crystallinity of the Substrate in Graft Polymerization.*

RICHARD YERKES KAIN *Randolph*

Awarded the degrees of Bachelor of Science, 1957, and Master of Science, 1959, Massachusetts Institute of Technology. Thesis in the Department of Electrical Engineering: *Diode Network Synthesis.*

ROBERT KAISER

(January, 1962) *New York, New York*

Awarded the degree of Bachelor of Science, 1956, and Master of Science, 1957. Massachusetts Institute of Technology. Thesis in the Department of Chemical Engineering: *Agglomeration of Zinc Oxide Powders.*

MADHUSUDAN HIMATLAL KAMDAR

(January, 1962) *Bombay, India*

Awarded the degrees of Bachelor of Science, 1953, Bombay University, and Master of Science, 1957, University of Washington. Thesis in Metallurgy: *Tantalum-Tungsten-Rhenium System.*

MORTON IRVING KLIMAN *Newton*

Awarded the degrees of Bachelor of Arts, 1951, Boston College, Master of Arts, 1952, Yale University, and Master of Science, 1955, Massachusetts Institute of Technology. Thesis in Ceramics: *Refractory Alumina Fiber Composites.*

MARC ANDRE KOLPIN *Cambridge*

Awarded the degree of Diplom Ingenieur, 1957, Eidgenossische Technische Hochschule, Switzerland. Thesis in the Department of Aeronautics and Astronautics. *Flow in the Mixing Region of a Jet.*

RICHARD HOWARD KROCK *Brookline*

Awarded the degree of Bachelor of Science, 1959, Massachusetts Institute of Technology. Thesis in Materials Engineering submitted to the Department of Metallurgy: *Mechanical Behavior of the Two-Phase Composite, Tungsten-Iron-Nickel.*

ROGER WILLIAM MASON LETTS

Pittsburgh, Pennsylvania

Awarded the degrees of Bachelor of Engineering, 1952, Yale University, and Master of Science, 1956, Massachusetts Institute of Technology. Thesis in the Department of Chemical Engineering: *Yield Considerations in Packed Bed Reactor Design.*

HOWARD LESLIE LEVINGSTON

(September, 1961) *Portsmouth, New Hampshire*

Awarded the degrees of Bachelor of Science, 1951, and Master of Science, 1958, Massachusetts Institute of Technology. Thesis in Metallurgy: *Solid Solution and Second Phase Strengthening in Chromium Alloys at Elevated Temperatures.*

MOU-NENG LO *Taipei, Taiwan*

Awarded the degree of Bachelor of Science in Chemical Engineering, 1956, Purdue University. Thesis in the Department of Chemical Engineering: *Reactions of Carbon Monoxide and Hydrogen on Ruthenium-Silver Catalysts.*

HENRY ALBERT LYDEN *Cambridge*

Awarded the degrees of Bachelor of Arts, 1957, Williams College, and Bachelor of Science, 1957, and Master of Science, 1959, Massachusetts Institute of Technology. Thesis in the Department of Electrical Engineering: *Effective Masses of Free Carriers in Lead Telluride: Their Temperature Dependence and Contribution to Transport Properties.*

DAVID LYTLE McBRIDE, III *Chestnut Hill*

Awarded the degree of Bachelor of Science, 1956, Massachusetts Institute of Technology. Thesis in Metallurgy: *The Influence of Oxygen and Nitrogen on the Deformation and Fracture Characteristics of As-cast Iron at High Temperatures and Strain Rates.*

JOHN THOMAS MADELL

(January, 1962) *Hinsdale, Illinois*

Awarded the degrees of Bachelor of Science, 1955, and Master of Science, 1957, Illinois Institute of Technology. Thesis in the Department of Nuclear Engineering: *Spatial Distribution of the Neutron Flux on the Surfaces of a Graphite-Lined Cavity.*

DANIEL HABER MARCUS *Brookline*

Awarded the degrees of Bachelor of Mechanical Engineering, 1955, New York University, and Master of Science, 1956, and Mechanical Engineer, 1959, Massachusetts Institute of Technology. Thesis in the Department of Mechanical Engineering: *Analysis and Design of the Reaction-Jet Servomechanism.*

CHARLES HAROLD MARSTON *Cambridge*

Awarded the degrees of Mechanical Engineer, 1953, Stevens Institute of Technology, and Master of Science, 1959, and Mechanical Engineer, 1961, Massachusetts Institute of Technology. Thesis in the Department of Mechanical Engineering: *Controlled Hot Gas Generation from Solid Propellant.*

JAMES SWIFT MILLER

(September, 1961) *Burlington*

Awarded the degrees of Bachelor of Science in Electrical Engineering, 1955, Washington University, and Master of Science, 1956, Carnegie Institute of Technology. Thesis in the Department of Aeronautics and Astronautics: *Trajectory and Guidance Theory for a Low-Thrust Lunar Reconnaissance Vehicle.*

ERIK KARL AXEL OLSSON *Finspong, Sweden*

Awarded the degrees of Civilingenior, 1956, Kungliga Tekniska Hogskolan, and Master of Science, 1960, Massachusetts Institute of Technology. Thesis in the Department of Mechanical Engineering: *Centrifugal Effect on the Boundary Layer on a Blade of an Axial Turbomachine.*

ALBERT EDWARD PALADINO, JR.

(January, 1962) *Watertown*

Awarded the degrees of Bachelor of Science, 1954, and Master of Science, 1956, Alfred University. Thesis in Ceramics: *Aluminum Ion Diffusion in Aluminum Oxide.*

KIRIT SHANTILAL PARIKH *Ahmedabad, India*

Awarded the degrees of Bachelor of Engineering, 1956, Gujarat University, and Master of Technology, 1957, Indian Institute of Technology. Thesis in Civil Engineering: *Analysis of Shells Using Framework Analogy.*

FREDRIC RAICHLEN

(January, 1962) *Baltimore, Maryland*

Awarded the degrees of Bachelor of Engineering, 1953, Johns Hopkins University, and Master of Science, 1955, Massachusetts Institute of Technology. Thesis in Civil Engineering: *Theoretical and Experimental Study of Wave Induced Oscillations in Harbors of Simple Planform.*

DENNIS WILLIAM READEY *Aurora, Illinois*

Awarded the degree of Bachelor of Science, 1959, University of Notre Dame. Thesis in Ceramics: *Plastic Deformation of Ice.*

IRVEN HORTON RINARD *New York, New York*

Awarded the degrees of Bachelor of Chemical Engineering, 1955, University of Delaware, and Master of Science, 1957, Massachusetts Institute of Technology. Thesis in the Department of Chemical Engineering: *Dynamic Behavior of Heat Transfer Equipment.*

ADEL FARES SAROFIM

(January, 1962) *Cairo, Egypt*

Awarded the degrees of Bachelor of Arts, 1955, University of Oxford, England, and Master of Science, 1957, Massachusetts Institute of Technology. Thesis in the Department of Chemical Engineering: *Radiant Heat Transmission in Enclosures.*

ALLAN CARTER SCHELL

(September, 1961) *Medford*

Awarded the degrees of Bachleor of Science, and Master of Science, 1955, Massachusetts Institute of Technology. Thesis in the Department of Electrical Engineering: *Multiple Plate Antenna.*

RICHARD JOHN SCHWARTZ

Waukesha, Wisconsin

Awarded the degrees of Bachelor of Science, 1957, University of Wisconsin, and Master of Science, 1959, Massachusetts Institute of Technology. Thesis in the Department of Electrical Engineering: *Thermal and Electronic Transport Properties of a (Bi_2Te_3)-(Sb_2Te_3)-(Bi_2Se_3) Semiconducting Alloy.*

RICHARD GROBE SCHWIND *Elyria, Ohio*

Awarded the degrees of Bachelor of Science, 1955, and Master of Science, 1956, Massachusetts Institute of Technology. Thesis in the Department of Mechanical Engineering: *Three-Dimensional Boundary Layer Near a Strut.*

ALWYN CHARLES SCOTT

(September, 1961) *Westboro*

Awarded the degrees of Bachelor of Science, 1952, and Master of Science, 1958, Massachusetts Institute of Technology. Thesis in the Department of Electrical Engineering; *Design and Oscillator Applications of High-Current Tunnel Diodes.*

GARDNER DUDLEY SHEPARD *Stow*

Awarded the degrees of Bachelor of Science, 1954, Yale University, and Master of Science, 1957, Massachusetts Institute of Technology. Thesis in the Department of Mechanical Engineering: *Effect of Lubricant Cavitation on the Non-Steady Properties of Journal Bearings.*

RICHARD EARL SKAVDAHL

Dearborn, Michigan

Awarded the degrees of Bachelor of Science, 1956, Massachusetts Institute of Technology, and Master of Science in Engineering, 1957, University of Michigan. Thesis in the Department of Nuclear Engineering: *Solvent Extraction of Nitrosylruthenium by Trilaurylamine in Nitrate Systems.*

RICHARD DALE SMALLWOOD

(January, 1962) *Dayton, Ohio*

Awarded the degrees of Bachelor of Science, 1957, and Master of Science, 1958, Massachusetts Institute of Technology. Thesis in the Department of Electrical Engineering: *Automated Instruction Decision Systems.*

CLOYD VIRGIL SMITH, JR.

Sylacauga, Alabama

Awarded the degree of Bachelor of Civil Engineering, 1958, Georgia Institute of Technology, and Master of Science, 1959, Stanford University. Thesis in Civil Engineering: *Effect of Shear Deformation on Large Deflections of Orthotropic Circular Plates.*

KENNETH ALAN SMITH *Brookline*

Awarded the degrees of Bachelor of Science, 1958, and Master of Science, 1959, Massachusetts Institute of Technology. Thesis in the Department of Chemical Engineering: *Transpired Turbulent Boundary Layer.*

ARNOLD STANCELL *New York, New York*

Awarded the degree of Bachelor of Chemical Engineering, 1958, City College of New York. Thesis in the Department of Chemical Engineering: *Effect of Chromatographic Transport of Reverse-Wetting Agents on Oil Displacement from Porous Media.*

CHARLES STEIN *Yonkers, New York*

Awarded the degrees of Bachelor of Metallurgical Engineering, 1952, Syracuse University, and Master of Science, 1954, and Metallurgical Engineer, 1960, Massachusetts Institute of Technology. Thesis in Metallurgy: *Anomalous Resistivity Changes During Elevated Temperature Creep of Aluminum.*

NICHOLAS JAMES STEVENS, JR.

Clark, New Jersey

Awarded the degrees of Bachelor of Science, 1957, and Master of Science, 1958, Massachusetts Institute of Technology. Thesis in the Department of Chemical Engineering: *Effect of Electron Irradiation Prior to Reaction on the Activity of a Semiconductor Catalyst.*

PETER TARASSOFF *La Salle, Quebec*

Awarded the degree of Bachelor of Engineering, 1956, McGill University. Thesis in Metallurgy: *Kinetics of Silica Reduction in the Molten CaO-Al_2O_3-SiO_2 Slag—Cu-Al-Si Alloy System.*

ARTHUR ALLEN WASSERMAN

Idaho Falls, Idaho

Awarded the degrees of Bachelor of Science, 1951, and Master of Science, 1952, Massachusetts Institute of Technology, and Bachelor of Arts, 1954, and Master of Arts, 1959, Oxford University, England. Thesis in the Department of Chemical Engineering: *Contributions to Two Problems in Space-Independent, Nuclear-Reactor Dynamics.*

MARTIN WEINSTEIN

(September, 1961) *Brooklyn, New York*

Awarded the degrees of Bachelor of Metallurgical Engineering, 1957, Rensselaer Polytechnic Institute, and Master of Science, 1959, Massachusetts Institute of Technology. Thesis in Metallurgy: *Solubility of Hydrogen in Liquid Iron and Iron Alloys.*

THOMAS FREUD WIENER

Groton, Connecticut

Awarded the degree of Bachelor of Science in Engineering, 1958, Brown University. Thesis in the Department of Aeronautics and Astronautics: *Theoretical Analysis of Gimballess Inertial Reference Equipment Using Delta-Modulated Instruments.*

THOMAS CUNNINGHAM WILDER

(January, 1962) *Winchester*

Awarded the degrees of Bachelor of Arts, 1956, Bowdoin College, and Master of Science, 1959, Massachusetts Institute of Technology. Thesis in Metallurgy: *Thermodynamic Study of the Liquid Aluminum-Bismuth-Lead System.*

CHENG YI YANG *Arlington*

Awarded the degrees of Bachelor of Science, 1953, National Taiwan University, and Master of Science, 1958, Purdue University. Thesis in Civil Engineering: *Dynamic Behavior of Reinforced Concrete Columns.*

LAURENCE RETMAN YOUNG

Riverdale, New York

Awarded the degrees of Bachelor of Arts, 1957, Amherst College, and Bachelor of Science, 1957, Massachusetts Institute of Technology, Certificat de Licence, 1958, Sorbonne, and Master of Science, 1959, Massachusetts Institute of Technology. Thesis in the Department of Aeronautics and Astronautics: *Sampled Data Model for Eye Tracking Movements.*

DOCTOR OF PHILOSOPHY

JOHN EDWARD ANDERSON

(January, 1962) *Minneapolis, Minnesota*

Awarded the degrees of Bachelor of Science, 1949, Iowa State College, and Master of Science, 1955, University of Minnesota. Thesis in the Department of Aeronautics and Astronautics: *Magnetohydrodynamic Shock Waves.*

ARTHUR EDWARD BERGLES *Allston*

Awarded the degrees of Bachelor of Science, and Master of Science, 1958, Massachusetts Institute of Technology. Thesis in the Department of Mechanical Engineering: *Forced-Convection Surface-Boiling Heat Transfer and Burnout in Tubes of Small Diameter.*

HARRY YONG-HWA CHOI

(January, 1962) *Watertown*

Awarded the degrees of Bachelor of Science in Engineering, 1954, University of Michigan, and Master of Science, 1956, Pennsylvania State University. Thesis in the Department of Mechanical Engineering: *Electrohydrodynamic Boiling Heat Transfer.*

OWEN FRANCIS DEVEREUX *Belmont*

Awarded the degrees of Bachelor of Science, 1959, and Master of Science, 1960, Massachusetts Institute of Technology. Thesis in Metallurgy: *Interaction Between Two Bodies Separated by a Fluid Electrolyte.*

RICHARD OSWALD DUDA

Sherman Oaks, California

Awarded the degrees of Bachelor of Science, 1958, and Master of Science, 1959, University of California at Los Angeles. Thesis in the Department of Electrical Engineering: *Equivalent and Optimal Equivalent Electrical Networks.*

FREDERICK JELINEK

(January, 1962) *Brighton*

Awarded the degrees of Bachelor of Science, 1956, and Master of Science, 1958, Massachusetts Institute of Technology. Thesis in the Department of Electrical Engineering: *Coding for Discrete Memoryless Two-way Channels.*

CLARENCE ALBERT KEMPER *Waltham*

Awarded the degrees of Bachelor of Science and Master of Science, 1956, and Mechanical Engineer, 1958, Massachusetts Institute of Technology. Thesis in the Department of Mechanical Engineering: *Analytical and Experimental Investigation of Annular Injection of Helium into a Supersonic Air Core.*

DAVID LEROY KETCHAM *Peabody*

Awarded the degrees of Bachelor of Science, 1956, Missouri School of Mines and Metallurgy, and Master of Science, 1960, Massachusetts Institute of Technology. Thesis in Sanitary Engineering: *Structural Analysis and High Temperature Corrosion of Cesium and Zirconosilicates.*

HARRY BARNEY LEE, JR. *Chicago, Illinois*

Awarded the degrees of Bachelor of Science, 1957, and Master of Science, 1959, Massachusetts Institute of Technology. Thesis in the Department of Electrical Engineering: *On Canonic Realizations of Two Element Kind Driving Point Impedances.*

JAMES DOYLE McCLURE *Waltham*

Awarded the degrees of Bachelor of Science, 1956, and Master of Science, 1957, University of Washington. Thesis in the Department of Aeronautics and Astronautics: *On Perturbed Boundary Layer Flows.*

NORMAN BARRIE McLEOD

(January, 1962) *Washington, D. C.*

Awarded the degrees of Bachelor of Arts and Sciences, 1955, University of Toronto, and Master of Science in Engineering, 1957, University of Michigan. Thesis in the Department of Nuclear Engineering: *Effect of Fuel and Poison Management on Nuclear Power Systems.*

LEONARD MORTON MAGID

Philadelphia, Pennsylvania

Awarded the degrees of Bachelor of Science, 1957, and Master of Science, 1958, University of Pennsylvania. Thesis in the Department of Electrical Engineering: *Heat Flow in Crystal Lattices.*

WILLIAM DAVID MARK

(January, 1962) *Chevy Chase, Maryland*

Awarded the degrees of Bachelor of Mechanical Engineering, 1956, Catholic University of America, and Master of Science, 1958, Massachusetts Institute of Technology. Thesis in the Department of Mechanical Engineering: *Inherent Variation in Fatigue Damage Resulting from Random Vibration.*

RONALD JOSEPH MASSA

(September, 1961) *West Orange, New Jersey*

Awarded the degrees of Bachelor of Science, 1956, Master of Science, 1958, and Electrical Engineer, 1960, Massachusetts Institute of Technology. Thesis in the Department of Electrical Engineering: *Investigation of Human Visual Information Transmission.*

JAMES RUSSELL MELCHER

(January, 1962) *Cambridge*

Awarded the degrees of Bachelor of Science in Electrical Engineering, 1957, and Master of Science, 1958, Iowa State University. Thesis in the Department of Electrical Engineering: *Electrohydrodynamic and Magnetohydrodynamic Surface Waves and Instabilities.*

TRENCHARD MORE, JR. *Watertown*

Awarded the degrees of Bachelor of Arts, 1952, Harvard University, and Master of Science, 1957, Massachusetts Institute of Technology. Thesis in the Department of Electrical Engineering: *Relations Between Implicational Calculi.*

DEAN THOMAS MORGAN

Elizabethton, Tennessee

Awarded the degrees of Bachelor of Science, 1955, University of Tennessee, and Master of Science, 1957, Massachusetts Institute of Technology. Thesis in the Department of Nuclear Engineering: *Irradiation of Santowax OMP—An In-Pile Loop Study.*

PHILIP FRANKLIN PALMEDO

New York, New York

Awarded the degrees of Bachelor of Arts, 1956, Williams College, and Master of Science, 1958, Massachusetts Institute of Technology. Thesis in the Department of Nuclear Engineering: *Measurements of the Material Buckling of Lattices of Natural Uranium Rods in D_2O.*

JOHN CARL PEAK *Denver, Colorado*

Awarded the degrees of Bachelor of Science in Engineering, 1952, Princeton University, and Master of Science, 1959, Massachusetts Institute of Technology. Thesis in the Department of Nuclear Engineering: *Theory and Use of Small Subcritical Assemblies for the Measurement of Reactor Parameters.*

IVAN PELECH *Succasunna, New Jersey*

Awarded the degrees of Bachelor of Science, 1956, and Master of Science, 1959, Case Institute of Technology. Thesis in the Department of Mechanical Engineering: *Flexible Disk Rotation Next to a Parallel Plane.*

ABRAHAM WEITZBERG

(January, 1962) *Rockaway Beach, New York*

Awarded the degrees of Bachelor of Science, 1957, and Master of Science, 1958, Massachusetts Institute of Technology. Thesis in the Department of Nuclear Engineering: *Measurements of Neutron Capture in U^{238} in Lattices of Uranium Rods in Heavy Water.*

JOHN ROBERT WOLBERG

Mt. Vernon, New York

Awarded the degree of Bachelor of Mechanical Engineering, 1958 Cornell University. Thesis in the Department of Nuclear Engineering: *Study of the Fast Fission Effect in Lattices of Natural Uranium Rods in Heavy Water.*

School of Humanities and Social Science

BACHELOR OF SCIENCE

Course XIV-A. Economics, Politics, and Engineering

JAMES WILLIAM BUECHÉ
Rocky River, Ohio

DENNIS EARL COOK
Fairbanks, Alaska

Course XIV-B. Economics, Politics, and Science

STEVEN JOHN BRAMS
Concord, New Hampshire

MILTON BAGBY GARBER
Enid, Oklahoma

SELIG ALLAN SALTZMAN
Brookline

OLIVER REED SMOOT, JR.
Falls Church, Virginia

Course XXI-A. Humanities and Engineering

RONALD CHARLES BIERMAN
Fords, New Jersey

DONALD WALTER HORNER
Atlantic Highlands, New Jersey

VICTOR BARRY SCHNEIDER
Brighton

Course XXI-B. Humanities and Science

WILLIAM HENRY ANDERSON, JR.
Lafayette Hill, Pennsylvania

ABRAHAM ARONOW
New Haven, Connecticut

GRANT ALLEN BESKE
Minnesota Lake, Minnesota

JOSEPH ROBERT BLOOMER
Rockville, Indiana

ROBERT MILTON CLARK BURNS
Westfield, New Jersey

GERSON COREN CARR
Cleveland Heights, Ohio

NICOLAS HERMAN CHARNEY
West Newton

BERNARD EUGENE DAVIS, JR.
Westerly, Rhode Island

JOHN McCULLOUGH DOBSON
New York, New York

ROBERT JOHN ELLIOTT
Springfield, Ohio

WILLIAM ALLEN EMERSON
Pullman, Washington

WILLARD DEAN FREE
Beaumont, Texas

ALAN EDWARD FUCHS
Forest Hills, New York

GREGORY NORMAN GABBARD
New Boston, Texas

WINSLOW HACKLEY GALBRAITH
Gainesville, Florida

WILLIAM HOWARD GEOGHEGAN
Baltimore, Maryland

RICHARD HORNBY
Ho-Ho-Kus, New Jersey

MICHAEL HENRY KAERICHER
Ft. Lauderdale, Florida

WALTER JOHN KOETKE, JR.
Pittsburgh, Pennsylvania

HARRISON WELLS McCRAW
Jackson, Mississippi

MARJORIE CAROLINE MALLEY
Terryville, Connecticut

ROBERT DAVID NASSAU
Los Angeles, California

JUDITH ELIZABETH SELVIDGE
Altadena, California

DON MOSHE SHAKOW
Brooklyn, New York

PETER REUBEN SHRIER
Newton Centre

DANIEL ALEXANDER SWITKES
Brooklyn, New York

ROBERT EDWARD WILHELM
Pittsburgh, Pennsylvania

DOCTOR OF PHILOSOPHY

DAVIS BERNARD BOBROW
Princeton, New Jersey

Awarded the degrees of Bachelor of Arts in General Education, 1955, and Bachelor of Arts in Communication, 1956, University of Chicago, and Bachelor of Arts, 1958, Oxford University, England. Thesis in Political Science: *Political and Economic Role of the Military in the Chinese Communist Movement, 1927-1959.*

GEORGE EDWARD DELEHANTY
Montgomery, Minnesota

Awarded the degree of Bachelor of Business Administration, 1953, University of Minnesota. Thesis in Industrial Economics: *Analysis of the Changing Proportion of Nonproduction Workers in U.S. Manufacturing Industries.*

MUHAMMED AKHLAQUR RAHMAN
Sylhet, Pakistan

Awarded the degrees of Bachelor of Arts, 1947, Muslim University, Master of Arts, 1950, Dacca University of Pakistan, and Master of Arts, 1954, Victoria University, England. Thesis in Industrial Economics: *Partition, Integration, Economic Growth and Interregional Trade, A Case Study in the Growth of Interwing Trade in Pakistan.*

EDWARD BAER ROBERTS *Sharon*

Awarded the degrees of Bachelor of Science and Master of Science, 1958, and Master of Science, 1960, Massachusetts Institute of Technology. Thesis in Industrial Economics: *Dynamics of Research and Development.*

MARSHALL R. SINGER

New York, New York

Awarded the degree of Bachelor of Arts, 1955, Brooklyn College, and Master of Arts, 1956, New School of Social Research. Thesis in Political Science: *Leadership in Ceylon: A Comparative Study of Elites.*

HORACE HARRISON SQUIRE *Brookfield*

Awarded the degree of Bachelor of Science, 1949, University of Vermont. Thesis in Industrial Economics: *Investigation of the Present Status and the Effectiveness of Management Development Programs in Western Massachusetts.*

GEORGE THOMAS WEINER

Chicago, Illinois

Awarded the degree of Bachelor of Arts, 1957, Grinnell College. Thesis in Industrial Economics: *Piggyback and the Interstate Commerce Commission.*

School of Industrial Management

BACHELOR OF SCIENCE

Course XV. Industrial Management

STEPHEN EDMUND AMADOR
East Meadow, New York

THOMAS EDWARD AMBLER, II
Pittsburgh, Pennsylvania

ROGER LEIGHTON BECK
Atchison, Kansas

MARTIN BERKOWITZ
New York, New York

KURT DOUGLAS BLEICKEN
North Scituate

WILLIAM TERRY BRAY
Austin, Texas

THOMAS GORDON BURNS
Rockford, Illinois

JUAN JOSÉ CALVO DE DIOS
Miami, Florida

MARTIN FRANCIS CASEY, JR.
San Antonio, Texas

RAMESH JAYANTILAL CHAUHAN
Bombay, India
(See also S.B., Course II.)

WALLACE ELLIOTT COUCH
Martinsville, Indiana

EDWARD JAMES DEVLIN, JR.
Lynn

JOHN RANDOLPH BLAND DISBROW, JR.
Milwaukee, Wisconsin
(See also S.B., Course VI.)

ADOLFO JORGE FACUSSÉ
Tegucigalpa, Honduras

BARRY EARL FRANZ
Cincinnati, Ohio

DOUGLAS WRIGHT GAIDRY
Fort Lauderdale, Florida

RUDOLPH HENRY GAWRON, JR.
Chicopee

ORRIN JOSEPH GETZ
Great Neck, New York

MICHAEL ARNOLD GORFINKLE
Lynn

STEPHEN JESSE HANDEL
New York, New York

ARTHUR LEWIS HARPER
Allston

STEPHEN RICHARD HELPERN
New York, New York

MARTIN MICHAEL HOMBURGER
Forest Hills, New York

GORDON HUNTER JONES
Danville, Virginia

JEROME MITCHEL KAUFMAN
Bay Shore, New York

JAMES HARRY KNOWLES
Orleans

TERRY JODOK KOHLER
Kohler, Wisconsin

RANDALL HERBOTH KUNZ
Mattapoisett

STEVEN DAVID LEVY
Montreal, Quebec

DENNIS OTTO LUEBKE
Schenectady, New York

MALCOLM DOUGLAS McMILLAN
Detroit, Michigan

EDWARD FRANCIS MAGUIRE, III
Newtonville

GORDON WALTER MANN
Lebanon, Connecticut

DON PAUL MOEHRKE
Flint, Michigan

ROBERT ALLEN MORRIS
Ladue, Missouri

DONALD EUGENE NELSON
Aurora, Illinois

ALFREDO PARDO KOPPEL
Bogota, Colombia

MICHAEL FRANK PARLAMIS
Jamaica, New York
(See also S.B., Course I.)

JOE RAPAPORT
Brooklyn, New York

ALLEN KNUTE REAM
Hayward, California
(See also S.B., Course VI.)

JOSÉ ANDRÉS RIONDA, JR.
New Orleans, Louisiana

BARRETT BROWNING ROACH
Maryville, Tennessee

RICHARD ALAN ROBNETT
Boston

EDWARD JAY SCHWARTZ
Chicago, Illinois

VIJAYKUMAR JAYANTILAL SHAH
Bombay, India

STEVEN JEROME SMITH
Woodstown, New Jersey

NORMAN PETER SOLOWAY
West Hartford, Connecticut

ROBERT EDWARD SPIVOCK
San Francisco, California

ROBERT JUDD SWANEY
Dixon, Illinois

HERBERT MARSHALL TAYLOR
Brighton

KENNETH ROBERT TAYLOR
St. Augustine, Florida

PETER EARLE THURSTON
Allison Park, Pennsylvania

JOHN ANTHONY VLCEK
Kingsville, Maryland

EUGENE PAUL VORHIES, JR.
New Hyde Park, New York

JOÃO HENRIQUE WAHRLICH
Randolph

ROY CHRISTOPHER WAINWRIGHT
York, Pennsylvania

THOMAS WILLIAM WALTZ
Gates Mills, Ohio

STEPHEN J. WARNER
Boston

RAYMOND PAUL WENIG
Toledo, Ohio

STEPHEN KELSEY WHITTEMORE
Rockford, Illinois

ROBERT PANSING WONG
Richmond Hill, New York
(See also S.B., Course VI.)

JOE EARLE WYATT, JR.
Bayside, Virginia

MASTER OF SCIENCE

Course XV. Industrial Management

MAURICE ANI, * M.S. *Newtonville*
Analysis of Financial Policies of Selected Firms in the Electrical Industry.

GEORGE WADE BATES, * B.S.
Memphis, Tennessee
Some Factors which Influence the Use of a Fair Value Rate Base in a Telephone Company.

ROBERT WILLIAM BAXTER, * B.S.
Needham
Growth of Retail Marketing Facilities in the Petroleum Industry.

* Sloan Fellow.

DAVID WILLIAM BEARDSLEY, * B.S.
Needham
A Look at the Scanlon Plan.

WILLIAM ARTHUR BLACK, JR., * S.M.
Wellesley
Cost Model for Management Control.

BRUCE ALDEN BLOMSTROM, S.B. *Dracut*
The Trade Mission as a Means of Expanding Exports.

JAY ROBERT BONNAR, S.B.
White Plains, New York
R & D Project Management: A Study of Supervisor-Subordinate Interpersonal Relations.

DAVID SCRANTON BREED, S.M.
Wilmette, Illinois
Theoretical and Practical Approach to Capital Budgeting.

MICHAEL EVERETT BROSE, S.B.
(January, 1962) Wallingford, Connecticut
Semiconductor Market in the United States, 1961-1965.

GEORGE PETER BUCKEY, * B.S.
Waynesboro, Pennsylvania
Metalworking in Latin American and Projected Growth to 1975.

ALAN BRUCE BURNS, * CH.E. *Belmont*
Pricing of New Chemicals.

JACK EDWARD CHARIPAR, * M.S.E.
Birmingham, Michigan
Business Design and Marketing Implications of Passenger Car Leasing.

RONALD LANE COLIER, S.B.
Brooklyn, New York
Polygraph Devices: Their Use in Industry.

WILLIAM ERNEST DAVIS, * B.S.
Northville, Michigan
The Appraisal Interview—Its Effectiveness in Improving Performance.

CHESTER WILLIAM DIERCKS, JR., * B.S.
Wellesley
Comparative Study of Management's Ability to Assign People to Manufacturing Jobs in a Unionized versus Non-Union Plant.

WILLIAM GARVIN DREW, II, B.S.
New Castle, New Hampshire
Study of the Correlation between Purchases of Industrial Products and the Buying Firm's Characteristics as Determined from Secondary Data Sources.

WALKER JEROME DUFFIE, * CH.E.
Ponca City, Oklahoma
Control Based on Simulation to Maximize a Firm's Present Net Worth.

* Sloan Fellow.

EUGENE JOSEPH ECKEL, * M.E.
Needham
Motivational Rewards for Engineers in Industry.

MOUSTAFA KAMAL EL SHERIF, * B.SC.
Cairo, Egypt
Planning for Industrialization in Egypt.

ENDRE ENDRESEN, JR., * B.S.
Moorestown, New Jersey
Effectuation of the Duty to Bargain in Good Faith.

ABRAHAM FEINBERG, S.B.
Great Neck, New York
Utilization of Detailed Data in the Computer Era with a Specific Application to Unit Inventory Control.

OLIVER CONSOLINI FILIPPI, S.B.
Englewood, New Jersey
Study of Integrated Data Processing for a Retail Chain.

THOMAS WILLIAM FINCH, * B.A.E.
Lancaster, California
Factors that Influence Changes in Cost and Time Schedules of Research and Development Contracts.

MICHAEL GORDON FRIEZE, A.B. *Waban*
Measurements of Advertising Effectiveness and Their Usefulness.

GEORGE RUSSELL GILFOIL, JR., B.S.E.E.
Dorchester
Some Factors Affecting the Utilization of Electronic Data Processing Systems.

RÓMULO HÉCTOR GONZÁLEZ ZUBIETA, LIC. *Monterrey, Mexico*
Solution of the Traveling Salesman Problem by Dynamic Programming on the Hypercube.

RICHARD ALAN GOODMAN, B.S.
Watertown
Job Content, Motivation, and Satisfaction.

GEORGE BARRY GRAVES, JR., * B.E.E.
Newport News, Virginia
Influence of Work History on the Development of Effective Researchers.

STEPHEN FISKE HALL, B.A. *Lexington*
Administration of Public Enterprise in India.

CALVIN BRYANT HARGIS, JR., * M.S.
Dayton, Ohio
Financial Management of the Development of Air Force Systems.

KENNETH FRASER HOLTBY, * B.S.
Bellevue, Washington
Airline Equipment Financing: A Case Study of Pan American World Airways.

NATHANIEL SAWYER HOWE, * B.S.
Farmington, Connecticut
Study of Machine Tool Purchasing; Organizations and Procedures.

ALAN THEODORE HUNDERT, B.M.E.
Flushing, New York
Personality as a Determinant of Occupational Success.

JOSEPH VINCENT IEMOLO, B.E.E.
Bristol, Connecticut
Closed-Circuit Educational Television Production-Distribution System for Massachusetts Institutions of Public Higher Education.

RICHARD CLAUS KATZ, B.S.
New York, New York
Profitability of Put and Call Option Trading.

MAX E. KENNEDY, * B.S. *Clearfield, Utah*
Analysis of the Air Force Hi Value Logistic System, an Industrial Dynamics Study.

CARL EDWARD KLECKNER, * B.S.
Scranton, Pennsylvania
New Techniques for Project Planning and Control.

ARNOLD WILLIAM KLEINEBECKER, JR., S.B. *Cambridge*
Study of the Introduction of Time Standards in a Distribution Operation.

HAROLD S. KOLETSKY, * M.E.E.
Syosset, New York
Some Considerations for Installation of a Scanlon Plan in a Non-Union Company.

PAULO SOU-LEUNG LAM, S.M.
Hong Kong
Effect of Storage and Harvest on the Price of Soybean Futures.

ERIC WILLIAM AUGUST LANGE, * B.M.E.
Allen Park, Michigan
Trends in the World Automobile Industry: The Effect of the Common Market.

* Sloan Fellow.

JOHN PAUL LEAHY, A.B., S.B.
Wellesley Hills
Investment Decision—A Case Study.

ERIC ROBERT LEE, M.S.
New York, New York
Analysis of Tax-Free Exchange Mutual Funds.

HENRY VICTOR LETT, JR., S.B.
Lynbrook, New York
A DYNAMO Pre-Compiler for the IBM 1620.

SYDNEY PHILLIP LEVINE, A.B.
New York, New York
Heuristic Determination of Optimum Filters for Use in a Rule for Speculative Market Action.

ROBERT WILLIAM LILLARD, S.B.
Live Oak, California
Method of Steepest Ascent for Nonlinear Programming.

RICHARD ALVIN LONG, * B.S.
Webster Groves, Missouri
Analysis of Major Business Account Marketing by the Bell Telephone System.

ARNE ERIK MARK, * M.S.
Vasteras, Sweden
Foreign Competition and the American Industry—A Study with Special Reference to the Heavy Electrical Equipment Industry.

ALBERT RAYNOR MEAD, * B.A.
Woodbury, New York
Analysis of the American Transportation System and Determination of the Possibility of Hydrofoil Vessels Competing in this Industry.

PETER FELIX MUELLER, * DR. OF LAW
Basle, Switzerland
Objectives and Methods in Organizational Planning for Foreign Operations.

HUGH FRANCIS MULLEN, B.S.E.E.
Brooklyn, New York
Cost Comparison Between Harmonic and Pseudo-Random Signaling Methods in High-Accuracy Satellite Tracking Systems.

RAYMOND STANLEY NELSON, JR., * M.S.
Thousand Oaks, California
Study of the Engineering Image in Industry and Government.

OLE CHRISTIAN NORD, SIVILING.
(January, 1962) *Oslo, Norway*
Growth of a New Product.

JOHN VICTOR OLSZEWSKI, S.B.
Pulaski, Wisconsin
Factor Analysis of the Measures of Corporate Activity.

JAMES MONTGOMERY OSBORNE, * B.S.E.E.
Moorestown, New Jersey
Factors in Project Success.

DONALD KENTFIELD PARK, II, S.B.
Pacific Palisades, California
Cost of Culture: The Problem of Financing a Major Symphony Orchestra.

ROBERT CORNELL PATERSON, * B.S.
Pontiac, Michigan
The "Ineffective" Salaried Employee: A Case Study of Policies Regarding Discharges.

JOHN FRANCIS PRENDIVILLE, JR., * M.S.
Needham
Effects of Growth and Technological Improvements on the Regulation of the Telephone Industry.

ALBERT OTIS RIORDAN, JR., * B.S.
Boston
Encouraging Prospects of Assistance from Computers and Mathematics in Manufacturing Control Decision Making—A Case Study.

JAMES JOHN RITCHIE, * B.S.
Endicott, New York
Lease or Buy—How the Customer's Decision Effects the Seller.

LAWRENCE RUDOLPH ROESSEL, JR., * B.S. *Wellesley Hills*
Aspects of Decentralization.

GLENDON EUGENE ROSE, * B.B.A.
Arcadia, California
Factors Associated with Managerial Success.

MICHAEL H. ROTHKOPF, A.B.
Los Angeles, California
Priority Assignment in Queues with Non-Linear Waiting Costs.

RAYMOND JOSEPH SCHULTZ, * B.S.
Bay City, Michigan
Successful Career Patterns—Automotive Engineers.

KULATHADY VITTAL SHETTY, * B.A.
Malloor, India
Role of Investment Banker in India.

* Sloan Fellow.

ROBERT HASKINS SMALLMAN, S.B.
(September, 1961) *Saxonville*
Design and Implementation of an Inventory Control System for a Technologically Based Company.

FRED FOX STODDARD, * B.S.E.E.
Needham
Influences to Managerial Growth.

WILLIAM EDMUND STONEY, JR., * M.S.
Hampton, Virginia
Environmental Factors Influencing Idea Production in a Research Laboratory.

JOHN RICHARD TALBOT, B.A.
Westfield, New Jersey
The Duty to Bargain in Good Faith—The General Electric Case.

JULES JOHN VAN DEUN, * S.B.
Livonia, Michigan
Labor Relations in Engineering Organizations.

JOHN WILLIS VAUGHAN, * B.S.
Roanoke, Virginia
Role of the Small Business Investment Companies.

ROBERT WARSOWE, A.B. *Framingham*
Dynamics of Promotion: A Study of Role Attitude Change.

JOHN WEIBEL, JR., * M.S. *Dayton, Ohio*
Industrial Dynamics Study of Management Products Policies.

JON GILBERT WORMS, B.AERO.ENG.
Teaneck, New Jersey
Airline Accidents: Their Nature and Effects.

GORDON TAMIO YAMADA, * BACCALAUREATE *Newton*
Investigation of Corporate Long Range Planning.

JEROME HAROLD YAVARKOVSKY, B.M.E.
New York, New York
Discount House Operations in Bookselling.

LARRY PETER YERMACK, B.S.
Pittsburgh, Pennsylvania
Computer Model of a Promotional Decision.

DOCTOR OF PHILOSOPHY

MARTIN CARL ANDERSON *Northboro*

Awarded the degrees of Bachelor of Arts, 1957, and Master of Science, 1958, Dartmouth College. Thesis in the School of Industrial Management: *Federal Urban Renewal Program: A Financial and Economic Analysis.*

School of Science

BACHELOR OF SCIENCE

Course V. Chemistry

HANS CHRISTIAN ANDERSEN
Brooklyn, New York

GERALD LEONARD BECKER
Elmhurst, Illinois

FRANCIS JOSEPH BERLANDI
Hyde Park

LEONARD MICHAEL CASTELLUCCIO
Spring Valley, New York

ARNOLD MORRIS FALICK
Detroit, Michigan

DENNIS REINHOLD HAFEMANN
Cedarburg, Wisconsin

JOSEPH EARL LAPRADE
Winslow, Arizona

PATRICK GARY McCORMICK
Milwaukee, Wisconsin

PHILIP EDWARD MILLER
Cuyahoga Falls, Ohio

KENNETH ALBERT RAHN
Hasbrouck Heights, New Jersey

JEFFREY IRWIN STEINFELD
Flushing, New York

RICHARD NEEL SUTTON
Kansas City, Missouri

EMANUEL GEORGE TEREZAKIS
Waterbury, Connecticut

Course VII. Life Sciences

RICHARD ADAM BRONSON
New Rochelle, New York

RICHARD JOEL BROWN
Carteret, New Jersey

JAMES EDWARD ENGELER, JR.
West Lafayette, Indiana

ALFRED GILBERT
Forest Hills, New York

JONATHAN GLASS
New Rochelle, New York

JEFFREY STEVEN GRUBER
Stamford, Connecticut

GEORGE WILBUR MEYER, JR.
New Orleans, Louisiana

CURTIS HAROLD NORTHROP
Seattle, Washington

TIMOTHY JAY O'BRIEN
Wahpeton, North Dakota

MARTIN LEON PATO
Miami, Florida

HESCHEL JOSHUA RASKAS
University, Missouri

WILLARD LINEUS RODGERS, JR.
Omaha, Nebraska

BARRY JAY ROSEN
Cranford, New Jersey

JOHN DAVID ROTHSCHILD
Highland Park, Illinois

ANTHONY JOHN JOSEPH ROURKE, JR.
New Rochelle, New York

THOMAS STEPHEN ROWE
Lake Worth, Florida

ALAN LEIGH SNYDER
Norfolk, Virginia

JARED WARNER STARK, III
Birmingham, Michigan

HAROLD DAVID STEIN
New York, New York

STEPHEN REEVES WALTMAN
(S.B. in Quantitative Biology) (September, 1961)
Brooklyn, New York

NEIL KAY WEATHERBIE
Twin Falls, Idaho

MELVIN WEISS
Yonkers, New York

LYNN WALTON WHELCHEL, JR.
Miami, Florida

WARREN MYRON ZAPOL
Bloomingburg, New York

Course VIII. Physics

DAVID JEFFREY ABESHOUSE
Luzerne, Pennsylvania

JERRY LEE ADAMS
Oklahoma City, Oklahoma

JOSE RAMON ALONSO
Buenos Aires, Argentina

JAMES ALFRED ANDERSON
Los Angeles, California

LLOYD ARMSTRONG, JR.
Houston, Texas

DONALD CHARLES AUCAMP
Philadelphia, Pennsylvania

STEPHEN JEFFERS BANKS
Bainbridge Island, Washington

ALBERT LEMUEL BLACKWELL
Mars Hill, North Carolina

ALEXANDER BOGAN, JR.
Uniondale, New York

HOWARD EDWARD BRANDT
Seattle, Washington

JOHN FRANCIS BRENNER, III
Charleston, South Carolina

GARY DUANE BRINKER
Bowling Green, Ohio

PETER MICHAEL CANEPA
North Brunswick, New Jersey

DAVID CROCKETT CAREY
Montclair, New Jersey

HARVEY ELLIS CLINE
Brookline

ARTHUR ROGER COOKE
Lexington, Kentucky

VIRGIL GLENN COX
Harve, Montana

JOHN MICHAEL COZZOLINO, JR.
New Haven, Connecticut

JEROME SAMUEL DANBURG
Houston, Texas

ARTHUR ROSS DuCHARME, JR.
Rochester, New York

FLOYD EUGENE DUNN
Falls Church, Virginia

ORRIN DEANE FACKLER
Minneapolis, Minnesota

DAVID DALLAS FRIESEN
Enid, Oklahoma

ARTHUR TAYLOR FUNKHOUSER, II
Oklahoma City, Oklahoma

KENNETH WILLIAM GENTLE
La Grange Park, Illinois

KENNETH RAYE GERMAN
Grosse Pointe, Michigan

ROBERT GILMORE
Long Island City, New York
(See also S.B., Course XVIII.)

GARY ALLEN GRIESS
Omaha, Nebraska

GEORGE COLE HARTMANN
Garrett Park, Maryland

ROBERT H. HEINMILLER, JR.
Boston

JOHN CARL HERMANSON
Madison, Wisconsin

ROBERT JAMES HUFF
Wichita, Kansas

NORMAN DETWILER HUMER
Amarillo, Texas

WAI-CHIU HUO
Hong Kong

GEORGE ELIAS IOUP
Altoona, Pennsylvania

THOMAS JEFFERSON ISING
Peoria, Illinois

LARRY EUGENE JOHNSON
New Concord, Ohio

LEONARD EVANS JOHNSON
Seattle, Washington

ALEXANDER JOSEPH KLIMAS, JR.
Waltham
(See also S.M., Course VIII.)

GEORGE NICHOLAS KREBS, JR.
Trenton, New Jersey

ALLEN STEPHEN KRIEGER
Rockville Centre, New York

STEPHEN GEORGE KUKOLICH
Lunenberg

NEWTON JOHN KUPELIAN
Belmont

GARY JOE LINFORD
Salt Lake City, Utah

PETER MICHAEL MAAS
Rancho Santa Fe, California

GARY ALAN MATCHETT
Superior, Wisconsin

HAROLD JOSEPH METCALF
Newton Centre

RALPH ROBERT MILLER
Chicago, Illinois

KEIHACHIRO MORIYASU
Seattle, Washington

PETER HALLIDAY OWENS
Long Beach, California

ROBERTO DANIELE PECCEI
Rome, Italy

GARY WILSON PHILLIPS
Kansas City, Missouri

RICHARD EARL PHILLIPS
Shreveport, Louisiana

FRANCIA KAYE PORTER
Allston

CHARLES BRANDON QUALLS
Beaver Dam, Wisconsin

EDGAR FREDERICK ROMBERG
Clifton, New Jersey

JAMES ALAN ROSS
Drexel Hill, Pennsylvania

JOHN WALKER RYON, III
Lynchburg, Virginia

ROBERT ALISON SCHLENKER
Rochester, New York

STEPHEN GORDON SCHMELLING
Kenosha, Wisconsin

KAI SCHWARZ
Gaithersburg, Maryland

HERBERT LAWRENCE SELESNICK
Chelsea

DEVRIE JANE SHAPIRO
Great Neck, New York

JAMES NORMAN SHAPIRO
Niagara Falls, New York

THOMAS PATRICK SHEAHEN
Cleveland Heights, Ohio

WALTER ANDREW SIMMONS
Culver City, California

ROBERT WILLIAM SIMON
Brooklyn, New York

GEORGE EDWARD SINCLAIR
Tacna, Peru

LOREN COURTLAND SKINNER, JR.
Tulsa, Oklahoma

BRUCE FREDERICK SMITH
Maywood, Illinois

STEPHEN ROGER SMITH
Fayette, Alabama

THANE SMITH
Cold Spring Harbor, New York

SUK SUET SOO
Kuala Lumpur, Malaya

RICHARD BERNARD STEIN
Eastchester, New York

ROGER JOHN SULLIVAN
North Chelmsford

LEON SUTTON
Long Beach, New York

BONNARD JOHN TEEGARDEN
Rumson, New Jersey

ROBERT LEROY THEWS
Sioux City, Iowa

IRVING HERBERT THOMAE
Attleboro

DAVID ROBERT WAKEMAN
Upper Montclair, New Jersey

CHARLES STAGG WELLER, JR.
Chattanooga, Tennessee

CLARK WOODY WHITE
Decatur, Georgia

RICHARD CARDINAL WILLIAMSON
(September, 1961)
Hayward, Wisconsin

FREDERICK CHARLES WINKELMANN
East Meadow, New York

HENRY ROBERT WOOLNER
Manchester, New Hampshire

ROBERT STEPHEN WRATHALL
Summit, New Jersey

DUK NONG YOON
Ann Arbor, Michigan

ROBERT VINCENT ZARA
Trenton, New Jersey

Course XII. Geology and Geophysics

Bachelor of Science in Earth Sciences

DAVID LESTER BUTLER
Mesilla Park, New Mexico

STANLEY SHERMAN JACOBS
Rochester, New Hampshire

ERNEST WHITNEY KENDALL
Bridgewater, Vermont

HENRY NEWTON McCARL
Baltimore, Maryland

FRANCIS XAVIER MAHER, JR.
Littleton

JAMES EDWARD MIELKE
Toledo, Ohio

PHILIP HAYES NELSON
Boulder, Colorado

ALAN ARTHUR REGIER
Newport News, Virginia

PHILIP RICHARD SHERIDAN
Jamaica Plain

JOHN ALAN WERKHEISER
Allentown, Pennsylvania

Course XVIII. Mathematics

SAMIR NASRAT AL-FARISI
Baghdad, Iraq

JEREMY ETHAN ALPERIN
Newton Centre

PETER GORDON ANDERSON *(January 1962)*
Midland, Michigan

WILLIAM LOUIS ANTOINE
San Diego, California

BERNARD JACOB ARBIC
Sault Ste. Marie, Michigan

BARRY BELKIN
Philadelphia, Pennsylvania

HAROLD EDWARD BENZINGER, JR.
New York, New York

MICHAEL PETER BRADIE
Brooklyn, New York

JAN CHRISTOPHER BROWN
Quincy

DOUGLAS ANDREW CASSELL
Tuscaloosa, Alabama

JOHN BENJAMIN COHEN
Worcester

DAVID KENT COHOON
Casey, Illinois

SAM WAYNE DUNCAN
St. Louis, Missouri

RUTH RHODA ENTINE
Philadelphia, Pennsylvania

GERALD JOSEPH FLEISCHLI
Andover

FRANCISCO JOSÉ FONESCA QUESADA
San Jose, Costa Rica

JEAN-PIERRE MAURICE FRANKENHUIS
Rio de Janeiro, Brazil

JAMES ROBERT GEISER
New York, New York

VINCENT WILLIAM GIAMBALVO
Neptune, New Jersey

ROBERT GILMORE
Long Island City, New York
(See also S.B., Course VIII.)

CHARLES GEORGE GLUECK, JR.
Philadelphia, Pennsylvania

GLORIA JEAN GOLDBERG
New York, New York

STEPHEN FOSTER GRISOFF
Boston

MICHAEL HENRY HALL
Cambridge

PHILIP JONATHAN HAUPTMAN
Brooklyn, New York

JAMES MICHAEL HORNELL
Manhattan Beach, California

JOSEPH HOROWITZ
Silver Spring, Maryland

MARTIN GERALD HURWITZ
Chelsea

ERVINA NATALIE IRBIN
Jamaica Plain

CHARLES ALAN KASE
Belleville, New Jersey

ROBERT LEE KNIGHTEN
Bell, California

JON CHRISTIAN LUKE
Minneapolis, Minnesota
(See also S.B., Course VI.)

DONALD ANTHONY MARTIN
Cambridge

MICHAEL DAVID MENN
Brooklyn, New York

DUSHAN MITROVICH
Newton

CHARLES ALBERT MUNTZ
Rockford, Illinois

STUART ALAN NELSON
Moline, Illinois

LEWIS MARK NORTON
Cheshire, Connecticut

STEVEN ALAN ORSZAG
Forest Hills, New York

HOWARD ALLEN PLOTKIN
Houston, Texas

PETER ALLEN REICH
Highland Park, Illinois

DAVID E. RESNICK
Jamaica, New York

FRANK RUBIN
Brooklyn, New York

ROBERT MARK SAENGER
Scarsdale, New York

WILLIAM ALLEN SMITH
Chapel Hill, North Carolina

ARTHUR DAVID SNIDER
Richmond, Virginia

JOHN FLORIAN SOWA
Pittsburgh, Pennsylvania

JOEL SOLOMON SPALTER
Silver Spring, Maryland

GERALD PAUL SPIELMAN
Brooklyn, New York

JOSEPH RAYMOND ARNOLD STRUTT
Newport, Rhode Island

GARY MILLER STUART
Normal, Illinois

STEPHEN MICHAEL TAFEEN
Far Rockaway, New York

LESLIE HOWARD THARP
Rhame, North Dakota

HENDRIKUS WILLEM TINKELENBERG
Newton

JOSEPH FRANCIS VITTEK, JR.
Baltimore, Maryland

ROBERT ALAN WAGNER
Los Angeles, California

BENJAMIN FRANKLIN WELLS, III
Lexington, Kentucky

MARILYN JOYCE WISOWATY
Calumet City, Illinois

ROBERT ALAN WOLF
Chillum, Maryland

CARL ISAAC WUNSCH
Westport, Connecticut

BOSTWICK FRAMPTON WYMAN
Columbia, South Carolina

Course XX. Food Technology

GEORGE HENRY GILBERT EISENBERG, JR.
Needham

THEODORE PETER LABUZA
Perth Amboy, New Jersey

EDWARD WARREN UNDERRINER
Jamaica, New York

MASTER OF SCIENCE

Course V. Chemistry

LEONARD GORDON FEINSTEIN, B.S.
Boston
Neutron Diffraction Studies of Transition Metal Binary Alloys.

THOMAS ANTHONY GOSINK, B.A.
Reading, Ohio
Studies in the Stereospecificity of Tin Hydride Additions to Acetylenic Bonds and the Metal-Metal Exchange Reaction.

Course VIII. Physics

JOSÉ CARLOS DE ALMEIDA AZEVEDO
GRADUATE ESCOLA NAVAL *Belmont*
(See also S.M., Course XXII.)
Surface Waves in Anisotropic Plasmas.

HARRISON HOOKER BARRETT, B.S.
Allston
Photoelectric Cross Sections in the Soft X-Ray Region.

PAUL JOSEPH FREYHEIT, B.S.
(January, 1962) *Framingham*
Cavity Perturbation Measurements of Relativistic Electron Mass Vibration.

FRANK LEE GALEENER, S.B.
(January, 1962) *Compton, California*
Longitudinal Magneto-Plasma Reflection in Semiconductors.

ALEXANDER JOSEPH KLIMAS, JR.
(See also S. B., Course VIII.) *Waltham*
Effect of an External Magnetic Field on the Distribution of Charged Particles in the Magnetosphere.

JUNE LORRAINE MATTHEWS, B.A.
Altadena, California
Energy Spectra and Angular Distributions of Neutrons Emitted in Photofission of Even-Mass Nuclei.

Course XII. Geology and Geophysics

HILDA CID-DRESDNER, DIPL.
Santiago, Chile
Crystal Structure of Potassium Hexatitanate $K_2Ti_6O_{13}$.

JAMES EDGAR EVERETT, B.A.
London, England
Effect of the Earth's Conductivity Structure on Magnetic Field Variation in the Frequency Range 1 to 100 Cycles per Day.

ROY JAY GREENFIELD, B.S.
Cedarhurst, New York
Frequency Response of a Liquid Layer over a Liquid Half Space.

EDWIN GUSTAF PAULSON, S.B.
Mexico, D.F., Mexico
Mineralogy and Origin of Pluma Hidalgo Titanium Deposit, Oaxaca, Mexico.

Course XVIII. Mathematics

STEPHEN JAMES MADDEN, JR., S.B.
Newton Lower Falls
Viscous Effects in Rotating Fluids.

Course XIX. Meteorology

DAVID LINUS BAILEY, A.B., B.S.
Fresno, California
Vertical Appearance of New England Thunderstorms on 3-cm Radar.

Course XX. Nutrition, Food Science and Technology

Nutrition

NORMAN EARLE BEDNARCYK, S.B.
Buffalo, New York
Lipid Breakdown in a Roasted Meat Product.

Food Science and Technology

VATREN JURIN STRISEO, CHEM.
Bogota, Colombia
Studies on Control of Respiration of Apples by Packaging Methods.

Oceanography

THOMAS CARLYLE WOLFORD, B.S. (XIX)
Butler, Pennsylvania
Method for Determining the Concentration of Oxygen in Aqueous Solutions.

Without Specification of Course or School

ALAIN FELIX BLOCH, DIPL. (VI)
Dieppe, France
The Extended Assignment Problem.

JEAN-LOUIS ROLAND POURNY, ENG. (II)
(January, 1962) *Paris, France*
Friction of Non-metallic Materials.

ALBERT WILLIAM SPITZAK, B.S. (II)
Concord
Investigation of Gyro Drift Caused by an Applied Rotating Linear Acceleration.

FRANK SIMON WERBLIN, S.B. (XVI)
Cambridge
Optical Tracking Using Direct Digital Encoding.

WILLIAM EARL YATES, B.S. (XVI)
Chipley, Florida
Analysis of the Air Traffic Flow Control Problem.

DOCTOR OF PHILOSOPHY

JOSEPH GEORGE ATKINSON
Edmonton, Alberta

Awarded the degree of Bachelor of Science, 1957, University of Alberta. Thesis in the Department of Chemistry: *Photochemical Reactions of Benzonitrile with Olefins and Acetylenes.*

BERTRAND BORIS AUBREY
New Haven, Connecticut

Awarded the degree of Bachelor of Science, 1954, New York University. Thesis in the Department of Physics: *Study of the Unequal Populations of Closely Spaced Energy Levels.*

DAVID ELLIS BALDWIN
West Hartford, Connecticut

Awarded the degree of Bachelor of Science, 1958, Massachusetts Institute of Technology. Thesis in the Department of Physics: *Effect of Close Collisions on the Two-Body Distribution Function for Coulomb Interactions.*

ARNOLD APPLETON BARNES, JR.
(January, 1962) *Charleston, West Virginia*

Awarded the degrees of Bachelor of Arts, 1952, Princeton University, and Master of Science, 1957, Massachusetts Institute of Technology. Thesis in the Department of Meteorology: *Energy Balance of the Stratosphere During the IGY.*

DWIGHT JOE BAUGHMAN *Ada, Ohio*

Awarded the degrees of Bachelor of Arts, 1953, Ohio Northern University, and Doctor of Medicine, 1957, Western Reserve University. Thesis in the Department of Biology: *Clotting Times of Thrombin-Fibrinogen Interactions as Perturbations of Polymerization on Total Fibrin Kinetics.*

CHARLES HERBERT BEEDE
(January, 1962) *Wilmington, Delaware*

Awarded the degree of Bachelor of Science, 1957, Northeastern University. Thesis in the Department of Chemistry: *Chemistry of Cyclobutene Oxides.*

BARRY BLOCK
(January, 1962) *Princeton, New Jersey*

Awarded the degree of Master of Science, 1957, Massachusetts Institute of Technology. Thesis in the Department of Physics: *Shell Model Theory of the Nucleon Strength Function.*

SIDNEY LEE BORISON
(September, 1961) *St. Joseph, Missouri*

Awarded the degree of Bachelor of Science, 1957, Massachusetts Institute of Technology. Thesis in the Department of Physics: *Charge Dependent Corrections to π Meson Photoproduction.*

ADAM MICHAEL BOYARSKI
Caledonia, Ontario

Awarded the degree of Bachelor of Arts and Sciences, 1958, University of Toronto. Thesis in the Department of Physics: *Lifetimes of the $K\pi_2^+$ and $K\mu_2^+$ Decay Modes and the Total K^+ Lifetime.*

EDWARD MEREDITH BURGESS
Birmingham, Alabama

Awarded the degree of Bachelor of Science, 1956, Auburn University. Thesis in the Department of Chemistry: *I. Photochemical Isomerization of Eucarvone and Cyclooctatrienone. II. Studies toward the Synthesis of Samandarin.*

JAMES JOSEPH BURKE, JR. *Northampton*

Awarded the degree of Bachelor of Science, 1958, University of Massachusetts. Thesis in the Department of Chemistry: *Dielectric Relaxation in Branched Polymers.*

CHARLES WILSON BURNHAM
(September, 1961) *Birmingham, Michigan*

Awarded the degree of Bachelor of Science, 1954, Massachusetts Institute of Technology. Thesis in the Department of Geology and Geophysics: *Structures and Crystal Chemistry of the Aluminum-Silicate Minerals.*

JOHN WALTER CHASE
(January, 1962) *Council Bluffs, Iowa*

Awarded the degree of Bachelor of Arts, 1957, Grinnell College. Thesis in the Department of Chemistry: *Lanthanum, Europium and Dysprosium Distributions in Igneous Rocks and Minerals.*

PHILIP ALDRICH DRINKER
(September, 1961) *Belmont*

Awarded the degree of Bachelor of Science, 1953, Yale University. Thesis under an interdepartmental Committee submitted to the Department of Geology and Geophysics: *Boundary Shear Stresses in Curved Trapezoidal Channels.*

JAMES ROBERT DURIG
Washington, Pennsylvania

Awarded the degree of Bachelor of Arts, 1958, Washington and Jefferson College. Thesis in

the Department of Chemistry: *Far Infrared Studies of Centrifugal Distortion and Anharmonic Vibrations in Polyatomic Molecules.*

DAVID WERTZ ELLIS
Huntingdon, Pennsylvania
Awarded the degree of Bachelor of Arts, 1958, Haverford College, Thesis in the Department of Chemistry: *Spectrofluorometric Investigation of Aminonapthols.*

PATRICK CARL FISCHER
Ann Arbor, Michigan
Awarded the degrees of Bachelor of Science, 1957, and Master of Business Administration, 1958, University of Michigan. Thesis in the Department of Mathematics: *Theory of Provable Recursive Functions.*

GEORGE MELVIN FOGLESONG
Los Angeles, California
Awarded the degrees of Bachelor of Science, 1945, United States Naval Academy, and Master of Science, 1954, Massachusetts Institute of Technology. Thesis in the Department of Physics: *Investigation of the Model of the Λ and Σ Hyperons as Isospin Conserving Bound States of a Nucleon and an AntiKaon.*

JOHN WILLIAM FRANKENFELD
(September, 1961) *Lake Bluff, Illinois*
Awarded the degrees of Bachelor of Arts, 1952, and Master of Science, 1957, University of Chicago. Thesis in the Department of Chemistry: *Properties of Carbodiimides; The Reaction of α-Chloro-α,α-diphenylacetanilide with Sodium Hydride.*

ROBERT CHARLES GESTELAND
(September, 1961) *Madison, Wisconsin*
Awarded the degrees of Bachelor of Science, 1953, University of Wisconsin, and Master of Science, 1957, Massachusetts Institute of Technology. Thesis in the Department of Biology: *Action Potentials Recorded from Olfactory Receptor Neurons.*

WALTER JULIUS CHARLES GRANT
Cambridge
Awarded the degrees of Bachelor of Arts, 1951, and Master of Arts, 1952, Boston College, and Bachelor of Science, 1958, Massachusetts Institute of Technology. Thesis in the Department of Physics: *Line Shapes of Paramagnetic Resonances of Chromium Ion in Ruby.*

KARL AUGUST HARTMAN, JR.
Wilmington, Delaware
Awarded the degree of Bachelor of Science, 1958, Lehigh University. Thesis in the Department of Chemistry: *Infrared Studies of Nucleic Acids and Related Compounds.*

HANS JÜRGEN HENNECKE
(January, 1962) *Saginaw, Michigan*
Awarded the degree of Bachelor of Science, 1957, Massachusetts Institute of Technology. Thesis in the Department of Physics: *Investigation of (He^3,d) Stripping Reactions on Light Nuclei.*

LOUIS HODES
(January, 1962) *New York, New York*
Awarded the degrees of Bachelor of Electrical Engineering, 1956, and Master of Science, 1957, Polytechnic Institute of Brooklyn. Thesis in the Department of Mathematics: *Hyperarithmetical Real Numbers and Hyperarithmetical Analysis.*

CHARLES EDWARD HOLT, III *Walpole*
Awarded the degree of Bachelor of Arts, 1957, Wesleyan University. Thesis in the Department of Biology: *Metabolism of Soluble Ribonucleic Acid in Reticulocytes.*

PHILLIP ISSENBERG
(September, 1961) *Malden*
Awarded the degree of Bachelor of Science, 1957, Massachusetts Institute of Technology. Thesis in Food Technology: *Investigation of the Volatile Components of the Banana.*

ZENON JACURA
(January, 1962) *Roxbury*
Awarded the degree of Bachelor of Arts, 1956, La Salle College. Thesis in the Department of Chemistry: *Equilibration of Exocyclic and Endocyclic Olefins: Isomeric Cycloöctanediamines.*

WILLIAM ALLEN JEFFERS, JR. *Lynnfield*
Awarded the degree of Bachelor of Arts, 1957, Amherst College. Thesis in the Department of Physics: *Frequency Dependence of Ultrasonic Attenuation in Liquid Helium Below 1°K.*

FREDERICK JOHN KAROL *Wollaston*
Awarded the degree of Bachelor of Arts, 1954, Boston University. Thesis in the Department of Chemistry: *Mechanism of the Reaction Between Cyanate and Ammonium Ions in Light and Heavy Water.*

PAUL LEON KELLEY *Bedford*
Awarded the Degrees of Bachelor of Arts, 1956, Rutgers University, and Master of Science, 1959, Cornell University. Thesis in the Department of Physics: *Statistical Mechanical Theory of Magnetic Resonance.*

DAVID ISAAC KNEE *Boston*

Awarded the degree of Bachelor of Science, 1956, City College of New York. Thesis in the Department of Mathematics: *Indecomposable Integral Representations of Finite Cyclic Groups.*

PAUL MARK KNOPF *Trenton, New Jersey*

Awarded the degree of Bachelor of Science, 1958, Massachusetts Institute of Technology. Thesis in the Department of Biology: *Hemoglobin Synthesis in a Cell-Free System.*

KARL KORNACKER *Chicago, Illinois*

Awarded the degree of Bachelor of Science, 1958, Massachusetts Institute of Technology. Thesis in the Department of Biology: *Electrophysiological Study of Sensory Discrimination in the Frog Corneal Reflex.*

ALLAN ROGER LARRABEE

Great Neck, New York

Awarded the degree of Bachelor of Science, 1957, Bucknell University. Thesis in the Department of Biology: *N^5-Methyltetrahydrofolate —an Intermediate of Methionine Biosynthesis.*

WILLIAM JOSEPH LEAHEY

Staten Island, New York

Awarded the degrees of Bachelor of Science, 1955, Master of Science, 1957, and Master of Science, 1958, Massachusetts Institute of Technology. Thesis in the Department of Mathematics: *Classification of the Indecomposable Integral Representations of the Dihedral Group of Order 2p.*

ANTHONY PETER MALINAUSKAS

Ashley, Pennsylvania

Awarded the degree of Bachelor of Science, 1956, King's College, and Master of Science, 1958, Boston College. Thesis in the Department of Chemistry: *Gaseous Diffusion—the Systems He-T_2 and He-HT.*

ROBERT EVERETT MANNING

(January, 1962) *Paramus, New Jersey*

Awarded the degree of Bachelor of Science, 1958, Brown University. Thesis in the Department of Chemistry: *I. Structure of Verbenalin. II. Structure of Gentiopikrin. III. Structure of Flavocarpine.*

STEVEN RALPH MILLER

(January, 1962) *Westlake, Ohio*

Awarded the degree of Bachelor of Science, 1958, Case Institute of Technology. Thesis in the Department of Chemistry: *Nuclear Spin-Lattice Relaxation Study of Some Hydrogen-Bonded Solids.*

ROBERT EINSOHN MOSHER

Larchmont, New York

Awarded the degree of Bachelor of Arts, 1958, Kenyon College. Thesis in the Department of Mathematics: *Functional Cohomology Operations and Secondary Characteristic Classes.*

BERNARD MULLIGAN

Montgomery, Alabama

Awarded the degree of Bachelor of Science, 1956, University of Alabama. Thesis in the Department of Physics: *Nonlocal Character of the Nucleon-Nucleus Potential.*

AUSTIN ALMOND O'DELL, JR.

(September, 1961) *Olney, Texas*

Awarded the degrees of Bachelor of Science, 1954, and Master of Arts, 1955, University of Texas. Thesis in the Department of Physics: *Energy and Angle Distribution of Bremsstrahlung Due to Monoenergetic Electrons.*

DIARMUID PÁDRAIG Ó MATHÚNA

Corcaigh, Ireland

Awarded the degrees of Bachelor of Science, 1955, and Master of Science, 1957, National University of Ireland. Thesis in the Department of Mathematics: *Rotationally Symmetric Deformations in Helicoidal Shells.*

EMMANUEL PHILIPPOS PAPADAKIS

Cambridge

Awarded the degree of Bachelor of Science, 1956, Massachusetts Institute of Technology. Thesis in the Department of Physics: *Propagation of Ultrasonic Waves in Alkali Halide Single Crystals.*

CHUNG HO PARK *Seoul, Korea*

Awarded the degree of Bachelor of Science, 1960, University of Illinois. Thesis in the Department of Chemistry: *Stereochemistry, Synthesis and Reactions of Cyclic and Bicyclic Alcohols.*

LEIF-NORMAN PATTERSON *Arlington*

Awarded the degree of Bachelor of Science, 1957, Massachusetts Institute of Technology. Thesis in the Department of Mathematics: *The Index Theorem.*

JAMES EMERSON POTTER

Rockford, Illinois

Awarded the degree of Bachelor of Science, 1959, California Institute of Technology. Thesis in the Department of Mathematics: *Some Statistical Properties of the Motion of a Nonlinear Oscillator Driven by White Noise.*

JAMES LAWRENCE POWELL

Berea, Kentucky

Awarded the degree of Bachelor of Arts, 1958, Berea College. Thesis in the Department of Geology and Geophysics: *Strontium Isotopic Composition and Origin of Carbonatites.*

ROBERT MURVIN QUIGLEY

(September, 1961) *Willowdale, Ontario*

Awarded the degrees of Bachelor of Arts, 1955, and Master of Arts, 1956, University of Toronto. Thesis under an interdepartmental committee submitted to the Department of Geology and Geophysics: *Composition and Engineering Properties of Some Vermiculitic Products of Weathering.*

GARY HENRY RASMUSSON

Clark, South Dakota

Awarded the degree of Bachelor of Arts, 1958, Saint Olaf College. Thesis in the Department of Chemistry: *1. Syntheses of Polyhydroazaphenanthrenes. 2. Chemistry of Polyhydroindanones.*

DONALD BURL ROGERS

Mobile, Alabama

Awarded the degree of Bachelor of Arts, 1958, Vanderbilt University. Thesis in the Department of Chemistry: *Preparation and Properties of Some Vanadium Spinels.*

CHARLES CARTER SCHNETZLER

(January, 1962) *Watertown*

Awarded the degree of Bachelor of Science, 1952, Kansas University. Thesis in the Department of Geology and Geophysics: *Composition and Origin of Tektites.*

DAN WILLIAM SCOTT

(January, 1962) *Phoenix, Arizona*

Awarded the degrees of Bachelor of Science, 1951, and Master of Arts, 1952, University of Texas. Thesis in the Department of Physics: *Extensive Air Showers at High Altitude.*

SIMON DAVID SILVER *Watertown*

Awarded the degree of Bachelor of Arts, 1957, University of Michigan. Thesis in the Department of Biology: *Material Transfer Accompanying Bacterial Conjugation.*

ARNOLD SINGER *Allston*

Awarded the degrees of Bachelor of Arts, 1957, Yeshiva University, and Master of Science, 1959, Massachusetts Institute of Technology. Thesis in the Department of Mathematics: *Some Random Walks in Which Every Site is a Potential Absorption Site.*

JOHN DIETRICH STETTLER

Rolla, Missouri

Awarded the degree of Bachelor of Science, 1956, University of Notre Dame. Thesis in the Department of Physics: *Theory of the Microwave Zeeman Effect in Atomic Chlorine.*

SHIGEYUKI TAKEYAMA

Hamamatsu, Japan

Awarded the degree of Ko-Gakushi, 1955, Tokyo Daigaku. Thesis in the Department of Biology: *Vitamin B_{12} and Methionine Biosynthesis in Escherichia coli.*

JOHN AULT TAYLOR

(September, 1961) *Leominster*

Awarded the degree of Bachelor of Science, 1956, Worcester Polytechnic Institute. Thesis in the Department of Physics: *Q Values Angular Distributions for $Ne^{20}(He^3, \alpha)He^{19}$ at 5.73 Mev.*

ROGER LEA THORNTON

(January, 1962) *New Castle, Delaware*

Awarded the degree of Bachelor of Science, 1957, University of Delaware. Thesis in the Department of Chemistry: *Potential Non-Classical Ions: 3-Cyclohexen-1-yl and 2-Bicyclo [3.1.0] hexyl Systems.*

MICHAEL ALEXANDER WAHLIG

Woodside, New York

Awarded the degree of Bachelor of Science, 1955, Manhattan College. Thesis in the Department of Physics: *Angular Distribution of $\pi - \rho$ Scattering Near 1 Bev.*

RAINER WEISS *Cambridge*

Awarded the degree of Bachelor of Science, 1955, Massachusetts Institute of Technology. Thesis in the Department of Physics: *Stark Effect and Hyperfine Structure of Hydrogen Fluoride.*

DAVID CARY WILLIAMS *Belmont*

Awarded the degree of Bachelor of Arts, 1957, Harvard University. Thesis in the Department of Chemistry: *Deuteron Excitation Functions: The (d,He^3) Reaction.*

GAR LOK WOO *San Francisco, California*

Awarded the degree of Bachelor of Science, 1959, University of California. Thesis in the Department of Chemistry: *Acid-Catalyzed Cleavage of cis-Bicyclo[6.1.0]nonane; Reactions of Medium-Sized Ring Carbenes; Structures of Bicyclo[4.2.0]octan-2-ols.*

CLAUS ADOLF WULFF *Cambridge*

Awarded the degree of Bachelor of Arts, 1959, Cornell University. Thesis in the Department of Chemistry: *Heat Capacities of Cubic and Hexagonal Ammonium Hexafluosilicate in the Range of 25° to 300°K.*

CHI-YU YANG HU *Taipei, Taiwan*

Awarded the degree of Bachelor of Science, 1955, National Taiwan University. Thesis in the Department of Physics: *Collective Nuclear Properties by the Method of Peierls and Yoccoz.*

LARRY ZAMICK

(January, 1962) *Winnipeg, Manitoba*

Awarded the degree of Bachelor of Science, 1957, University of Manitoba. Thesis in the Department of Physics: *Nuclear Reactions Involving Deuterons and Complex Nuclei.*

Officers' Reserve Corps

UNITED STATES ARMY

The following students received commissions as Second Lieutenants in the various branches of the Regular Army.

ORDNANCE CORPS

Stephen Jeffers Banks *

The following students received commissions as Second Lieutenants in the various branches of the United States Army Reserve.

CORPS OF ENGINEERS

Stephen Foster Grisoff
James William Kesler
Malcolm Douglas McMillan *
Bardwell Chenery Salmon *
Peter Earle Thurston*

SIGNAL CORPS

Orrin Joseph Getz
Gordon Hunter Jones *

ORDNANCE CORPS

Harold Edward Benzinger, Jr.
Albert Franklin Gleim *
Michael Alan Kornitzky
Dennis Otto Luebke
Vincent Edward Lysaght, Jr.
Robert Allen Lytle, Jr. *

CHEMICAL CORPS

John Louis Costello
Frederick William Schmidt

QUARTERMASTER CORPS

William Cortlandt Frazier

* Distinguished Military Graduate

The following students will receive commissions in the United States Army Reserve upon completion of the 1962 Summer Camp.

SIGNAL CORPS

Richard Arthur Duchaine
Douglas Wright Gaidry
Martin Michael Homburger *

ORDNANCE CORPS

Frederick Keith Glick

* Distinguished Military Graduate

UNITED STATES AIR FORCE

The following student has been commissioned a Second Lieutenant in the Regular Air Force.

Robert Raymond Barthelemy

The following students have been commissioned Second Lieutenants in the United States Air Force Reserve.

Ronald James Cahill
Scott Lee Danielson

The following students will be commissioned in the United States Air Force Reserve after successful completion of Summer Training.

Glenn Arthur Buckles
Edward Barry Feinberg
Albin Andrew Hastbacka
George Julian Meyers, III
Chester Herbert Riley

UNITED STATES NAVY

The following students have been commissioned Ensigns in the United States Naval Reserve for Engineering Duty only.

Francis Joseph Berlandi
Robert Thomas Brady
Alan Garrott Cameron
George Richard Castles
Jeremy Russell Goldberg
Robert Arthur Johnson
Douglas Henry Loescher
David Randall Mayhew
Jerry Lamar McAfee
John Alfred Moulson
David Earl Nickles
Roger Mayes Rowe
Murray B. Sachs
Joseph Raymond Strutt

Upon completion of Officer Candidate Training, the following students graduating under the Navy Enlisted Scientific Education Program will receive Regular commissions as Ensigns in the United States Navy, unless otherwise indicated.

Craig Alan Bergmann ‡
Virgil Glenn Cox
Harold Martin Heggestad
Donald Walter Horner
Melvin Eugene Walker

‡ Second Lieutenant, United States Marine Corps.

The following students will be Commissioned Ensigns in the United States Naval Reserve after successful completion of this summer's Midshipman Training Cruise.

Peter Carl Ommundson
Michael Roy Terry
Ronald Roy Troutman

Alphabetical List of Recipients of Degrees

(Recipients of S.B. except where other degree appears after name.)

Abeshouse, D. J. VIII
Abrams, E. D. (M.C.P.) . . . IV-B
Adams, J. L. VIII
Ahn, J. (S.M.) . . . . . III (Met.)
Alcalay, H. H. (S.M.) . . . X
Alexander, T. J. XVI
Al-Farisi, S. N. XVIII
Allen, J. L. (S.M.) VI
Allison, S. W. X
Alonso, J. R. VIII
Alper, M. E. (Sc.D.) I
Alperin, J. E. XVIII
Alzner, E. (S.M.) XVI
Amador, S. E. XV
Ambler, T. E., II XV
Amoroso, R. D. (San.E.) . . . XI
Amos, A. K. (C.E., S.M.) . . I
Andersen, H. C. V
Anderson, C. E. VI
Anderson, G. Y. (S.M.) . . . II
Anderson, J. A. VIII
Anderson, J. E. (Ph.D.) . . . XVI
Anderson, J. S. X
Anderson, M. C. (Ph.D.) . . XV
Anderson, P. G. XVIII
Anderson, W. H., Jr. . . . . XXI-B
Angelovich, S. J. (S.M.) . . . VI
Ani, M. (S.M.) XV
Antoine, W. L. XVIII
Antonini Pacheco, G. D. . . . VI
Araujo, A. G. P. (Nav.E., S.M.) XIII-A
Arbic, B. J. XVIII
Arcos Egred, M. D.
(Nav.E., S.M.) . . XIII-A
(S.M.) . . I
Armsby, R. H. (B.Arch.) . . . IV-A
Armstrong, L., Jr. VIII
Arndt, J. H., Jr. (S.M.) . . . II
Arndt, R. E. A. (S.M.) . . . I
Aronow, A. . . . . XXI-B
Asai, I. (E.E.) VI
(S.M.) VI
Atkinson, J. G. (Ph.D.) . . . V
Atrubin, A. J. (E.E.) VI
Aubrey, B. B. (Ph.D.) . . . VIII
Aucamp, D. C. VIII
Audet, G. J. G. (S.M.) . . . XI
Aung, S. H. (S.M.) I
Austin, M. E. (S.M.) VI
Averette, H. S. II
Azevedo, J. C. D. (S.M.) . . VIII, XXII

Babcock, J. H. (S.M.) . . . VI
Badrawi, M. T. XVI
Bagnard, G. C. (S.M.) . . . XVI
Bahiana, L. C. (ScD.) . . . VI
Bailey, D. L. (S.M.) XIX
Bails, W. B., Jr. II
Bajoni, J. J. XVI
Baldwin, D. E. (Ph.D.) . . . VIII
Ball, R. T. X
Bangs, L. B. (S.M.) . . . . III (Met.)
Banks, S. J. VIII
Banzhaf, J. F., III VI
Barnes, A. A., Jr. (Ph.D.) . . XIX
Barnett, A. W. (S.M.) . . . I
Barrett, H. H. (S.M.) VIII
Barritt, D. L. XVI
Barthelemy, R. R. X
Bartsch, R. R. VI
Bates, G. W. (S.M.) XV
Bates, H. E. III
Bauer, C. A., Jr. (S.M.) . . . XI
Baughman, D. J. (Ph.D.) . . VII
Baxter, R. W. (S.M.) XV
Bayly, E. J. VI
Beardsley, D. W. (S.M.) . . XV
Beaudoin, G. M. (S.M.) . . . I

Beck, R. L. XV
Becker, G. L. V
Becker, M. (S.M.) XXII
Bednarcyk, N. E. (S.M.) . XX(Nutr.)
Beede, C. H. (Ph.D.) V
Beetem, J. E. II
Belanger, P. R. (E.E.) . . . VI
Belkin, B. XVIII
Bellows, A. H. II
Bender, E. K. II
Bennett, G. E. (S.M.) . . . XI
Benrey, R. M. VI
Benzinger, H. E., Jr. XVIII
Berg, C. A. (Sc.D.) II
Berghager, D. I
Bergles, A. E. (Ph.D.) . . . II
Bergman, C. A. VI
Berkowitz, M. XV
Berlandi, F. J. V
Beske, G. A. . . . . XXI-B
Beusch, J. U. (S.M.) VI
Beving, D. U. (Nav.E., S.M.) . XIII-A
Biber, K. W. VI
Biefeld, T. B. XVI
Bierman, R. C. . . . . XXI-A
Bilyk, M. A. (S.M.) X
Bishop, B. B., Jr. (B.Arch.) . . IV-A
Biswas, A. K. (S.M.) . . . .III(Met.)
Black, W. A., Jr. (S.M.) . . . XV
Black, W. L. (S.M.) VI
Blackington, A. E. VI
Blackwell, A. L. VIII
Bleicken, K. D. XV
Bloch, A. F. (S.M.) . . . No Course
Block, B. (Ph.D.) VIII
Bloebaum, W. D., Jr. X
Blomstrom, B. A. (S.M.) . . . XV
Bloomer, J. R. . . . . XXI-B
Blunt, R. R. (S.M.) . . . . I, XXII
Bobrow, D. B. (Ph.D.) . XIV(Pol.Sci.)
Bocco, M. V. (S.M.) I
Bodenstein, P. F. S. (S.M.) . .III(Met.)
Bogan, A., Jr. VIII
Bolen, N. E. (E.E.) VI
Bonifaz Andrade, C. (Sc.D.) . X
Bonnar, J. R. (S.M.) XV
Bonnet, G. R. (S.M.) . . . .III(Met.)
Borison, S. L. (Ph.D.) . . . VIII
Borrego Larralde, J. M. (Sc.D.) VI
Bower, T. F. (S.M.) . . . .III(Met.)
Boyarski, A. M. (Ph.D.) . . . VIII
Bradie, M. P. XVIII
Brady, R. T. II
Brainard, Miss J. A. XIII
Brams, S. J. . . . . XIV-B
Brandely, J. G. X
Brandt, D. E. (S.M.) XVI
Brandt, H. E. VIII
Bray, W. T. XV
Breed, D. S. (S.M.) XV
Brehm, W. F., Jr. III
Brenner, J. F., III VIII
Breuer, R. (M.C.P.) . . . . IV-B
Brinker, G. D. VIII
Brisk, R. A. VI
Broderick, Miss J. J. (M.C.P.) . IV-B
Bromer, D. J. III
Bronson, R. A. VII
Bronstein, L. (S.M.) VI
Brose, M. E. (S.M.) XV
Brown, B. G. II
Brown, F. T. (Sc.D.) II
Brown, J C. XVIII
Brown, P. X
Brown, R. J. VII
Bruggemann, C. J. XVI
Buchen, M. G. (S.M.) . . . XVI
Buckey, G. P. (S.M.) XV
Buckles, G. A. II
Bueche, J. W. . . . . XIV-A
Buermeyer, G. (B.Arch.) . . IV-A
Bulfer, A. F., Jr. VI
Burgess, E. M. (Ph.D.) . . . V
Burke, J. J., Jr. (Ph.D.) . . . V
Burnham, C. W. (Ph.D.) . . XII
Burns, A. B. (S.M.) XV
Burns, R. F. (Nav. E., S.M.). . XIII-A
Burns, R. M. C. . . . . XXI-B

Burns, S. K. VI
Burns, T. G. XV
Bursky, P. (S.B., S.M.) . . . VI-A
Buta, J. R. II
Butler, C. M. (S.M.) XVI
Butler, D. L. XII

Cahill, R. J. X
Cairns, R. E., Jr. (Sc.D.) . . III (Met.)
Callahan, M. J. VI
Callarotti, R. C. (S.M.) . . . VI
Calvo de Dios, J. J. XV
Cameron, A. G. VI
Canaday, R. H. (S.M.) . . . VI
Canepa, P. M. VIII
Cannon, J. P. (S.M.) I
Caravito, V. A. II
Carey, D. C. VIII
Carley, G. L. (S.M.) VI
Carlin, J. F., Jr. (S.M.) . . . III (Met.)
Carlson, A. W. VI
Carlson, E. A. X
Carr, G. C. . . . . XXI-B
Carreras, R. A. (S.M.) . . . VI
Carter, J. W. III
Casey, M. F., Jr. XV
Cassell, D. A. XVIII
Castelluccio, L. M. V
Castles, G. R. II
Cegla, U. G. (S.M.) X
Centore, A. C. (S.M.) I
Cervenka, J. D. VI
Chadwick, P. J. (S.M.) . . . VI
Chandiramani, K. L. (Mech.E.) II
Chang, G. X
Charipar, J. E. (S.M.) . . . XV
Charneco, C. M., Jr.
(Nav.E., S.M.) . . XIII-A
Charney, N. H. . . . . XXI-B
Chartrand, J. F. (S.M.) . . . I
Chase, J. W. (Ph.D.) V
Chauhan, R. J. . . . . II, XV
Chen, A. C. (S.B., S.M.) . . . VI-A
Chi, C. W. (S.M.) X

Childs, W. H. VI
Choi, H. Y. (Ph.D.) II
Chun, K. R. II
Cid-Dresdner, Mrs. H. (S.M.) . XII
Citron, A. L. VI
Clayton, R. J. VI
Cline, H. E. VIII
Clopper, H. X
Coffey, T. P., Jr. VI
Coggins, J. L. (S.M.) II
Cogswell, D. L. VI
Cohen, J. B. XVIII
Cohoon, D. K. XVIII
Colby, W. L., III VI
Colier, R. L. (S.M.) XV
Colosimo, D. D. XVI
Compton, C. B. VI
Conant, R. A. VI
Congdon, J. C. VI
Connors, T. C., Jr. II
Conroy, B. L. VI
Cook, D. E. . . . . XIV-A
Cook, G. (S.M.) VI
Cook, R. G. (S.B.) II
(S.M.) II
Cooke, A. R. VIII
Copeland, A. B. II
Corbin, D. F. II
Corson, D. C. X
Costello, J. L. X
Couch, W. E. XV
Cox, V. G. VIII
Cozzolino, J. M., Jr. VIII
Crabtree, W. H. (S.M.) . . . VI
Crowell, R. A. VI
Crowley, J. M. VI
Cummings, K. D. (S.M.) . . . X
Cunningham, P. D. X
Cuthbertson, R. B. II
Cyros, K. L. (S.M.) XVII

D'Albora, J. M. VI
Daleas, R. S. X
Danburg, J. S. VIII

Daney, D. E. (S.M.) II
Danielson, S. L. (B.Arch.) . . IV-A
Dastur, P. N. (S.M.) . . . . III(Met.)
Davidson, J. K. (S.M.) . . . XVI
Davis, B. E., Jr. . . . . XXI-B
Davis, J. A. VI
Davis, J. W. (S.M.) . . . VI
Davis, R. H. (S.B., S.M.) . . VI-A
Davis, W. E. (S.M.) XV
Deak, G. I. (Sc.D.) II
Dean, S. O., Jr. XXII
Dean, S. W., Jr. (Sc.D.) . . . X
Decher, R. (S.M.) XVI
de Filippi, R. P. (Sc.D.) . . . X
Delagrange, A. D. (S.B., S.M.) VI-A
Delehanty, G. E. (Ph.D.) XIV(Ind.Ec.)
del Rio-Ortiz, P. A. (B.Arch.) . IV-A
Demetri, E. P. (S.M.) . . . XXII
den Dulk, C. J. M. (S.M.) . . II
De Nunzio, N. J. (Nav.E, S.M.) XIII-A
Devanney, J. W., III XIII
Devereux, O. F. (Ph.D.) . . . III(Met.)
Devlin, E. J., Jr. XV
Dible, D. M. VI
Diercks, C. W., Jr. (S.M.) . . XV
Disbrow, J. R. B., Jr. . . . . VI, XV
Divinia, D. D. VI
Dobson, J. M. . . . . XXI-B
Dodds, D. W., Jr. VI
Donohue, C. M. (S.M.) . . . X
Doppelt, N. X
Dorfman, M. (S.B., S.M.) . . XVI
Doyle, E. F., III (S.M.) . . . II
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CAROLYN BRADBURY COX, *Secretary*

MILES PAYNE COWEN

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and

THE PRESIDENT'S RECEPTION

will be held in the Great Court

immediately following these Exercises